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NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 14

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INTERNATIONAL AFFAIRS

CSSR-USSR SIGN CONTRACT ON POWER STATIONS CONSTRUCTION

Prague ZEMEDELSE NOVINY in Czech 25 Aug 79 p 1

[Article: "Atomic Contract. Significant Deliveries for Jaslovske Bohunice"]

[Text] Moscow, CTK--A significant contract for the delivery of technological equipment for the construction of the second V-2 nuclear power plant in Jaslovske Bohunice with a performance of 880 megawatts was signed on Thursday in Moscow, with the participation of representatives of Soviet organizations, by V. Svic, deputy general manager of PZO [Foreign Trade Enterprise] "Skodaexport," and I. Driving, deputy general manager of the foreign trade association "Atomenergo-export."

Present at the signing were V. Morozov, deputy chairman of the USSR state committee for economic contacts with foreign countries at the USSR Council of Ministers; P. Strougal, CSSR deputy foreign trade minister; C. Lovetinsky, Czechoslovak ambassador to the USSR; and other personalities.

Soviet and Czechoslovak plants will participate in the production of equipment for the second nuclear power plant in Jaslovske Bohunice. Soviet deliveries will reach an overall value of several tens of millions of rubles in the years 1979 to 1982.

In a discussion with the Moscow CTK reporter, the CSSR foreign trade minister P. Strougal called the contract just signed a new, significant step toward implementing Czechoslovak-Soviet agreements on cooperation in constructing nuclear power plants in the CSSR. He pointed out that these power plants constructed in the CSSR with the technological aid of Soviet organizations are, and in the next period will be, a decisive source of increased production of electric energy in Czechoslovakia.

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URANIUM ENTERPRISE PLAN FULFILLMENT

Prague RUDE PRAVO in Czech 23 Aug 79 p 1

[Article by (se): "Prior to Miners' Holiday. Workers' Initiative in the Uranium Mines in Dolni Rozinka"]

[Text] Dolni Rozinka 22 August (From our reporter) -- Fulfillment of the semiannual plan 52 percent of the overall volume of the annual task and exceeding the plan for the second quarter by almost 4 percent is the result of good political organizational activity in the concern enterprise Uranium Mines in Dolni Rozinka. Constant control of imposed tasks in party organizations and ready reaction to shortcomings as they arose helped to rapidly cope with the difficulties at the beginning of the year.

Timely Preparation

"We are definitely emphasizing uniform fulfillment of the plan and we are succeeding," said enterprise manager Eng Ludvik Trojan. He mentioned further that timely elaboration of the plan shares in this. It is a rule here that in tasks for the next year concrete figures are available at every mine as early as November. This is also the case with partial plans and therefore all who are in party organizations as well as trade-unionists and members of youth organizations can prepare themselves. It is therefore no problem to insure technology and good organization, emphasized Ladislav Halamka, chief of production management and technological development department.

Organization and technological insuring, no matter how perfect, would be of no avail without the initiative and understanding of the workers. This was confirmed in the past half-year when the extraordinary and record performances of many collectives were decisive in achieving successful results. The actions of collectives in R I Mine and R II Mine were exemplary--they are credited with the establishment of five sector limits

and two sector records. In June, the Milan Rossler collective extracted a record 4,950 tons of material in 23 work days and thus surpassed the old record of the Jaroslav Hrubca collective by almost 100 tons. An example of perseverance in best performance is, for instance, the collective led by Mario Valerian which for three months exceeded the ninety-meter sector limit in horizontal works. In January it achieved 94 meters; in February, 91.30; and in March, 92.30 meters. The crews of Miroslav Fic, Kvetoslav Hosek and others can also boast of such performances. Already traditionally among the best was the Milan Hronec youth collective which in May again surpassed its previous record in the production of drive shafts.

Irrespective of Profession

To the work of record crews in extracting and driving may also be added the activity of many specialists in quite different locations. This applies, for example, to the technician Pavel Marecek. With his skill and enthusiasm this designer contributed to the solution of quite a number of problems and may be credited with much equipment which makes the work of the miners easier such as equipment for mechanized drilling and construction of roof bolting and the so-called drilling column which does away with difficult hammer work, and so forth. Thus technological development contributes not only to simplification of the miners' work but also the economy.

The concern enterprise workers also included in the enterprise-wide socialist obligation measures to conserve fuel and energy of all kinds. In this they too are taking successful action as, for example, from the annual task to save 800 tons of standard fuel they have already saved 446 tons in a half-year which represents fulfillment of 55.7 percent. Thanks to the speedy and ready introduction of new improvement suggestions, 10 more of which were implemented in the half-year than anticipated, the enterprise saved almost Kcs 1.2 million.

The fact that 90 percent of the workers have joined in socialist competition and that 130 collectives have competed for the title of socialist work team, 102 of which have already achieved the title, proves that the semi-annual results are not accidental. This is proof of purposeful work and, primarily, informality in competition.

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GERMAN DEMOCRATIC REPUBLIC

NUCLEAR POWER USE, CONTROL DISCUSSED

West German Commentary

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 15 Sep 79 p 2

[Article by "Ws" datelined Berlin 14 Sep: "GDR: Peaceful Use of Nuclear Energy as a Way of Solving the Energy Problem -- Sharp Criticism of Nuclear Power Opponents -- 'Dangers Overestimated'"]

[Text] Along with the Soviet Union, the GDR intends to step up the construction of nuclear power plants. In an article published in the weekly DEUTSCHE AUSSENPOLITIK, a staff member of the GDR foreign ministry stated that the development of the peaceful utilization of nuclear energy was one of the most promising ways of solving the energy problem. According to the author, the Soviet Union is making every effort to meet the great demand for energy, both through measures in its own country and through the construction of subcontracting capacities in the CEMA countries. He points out that the cooperation between the countries of the socialist community is being carried out within the CEMA framework and on the basis of bilateral agreements and that in accordance with the resolutions adopted at the latest CEMA conference, it is planned to cooperate on the production of nuclear power plant equipment; this cooperation will help increase the present potential of the European CEMA countries and of Cuba by more than one-third. According to reports from East Berlin, the GDR is also participating in the construction of nuclear power plants in the Ukraine.

In the GDR itself, the fourth block of the Nuclear Power Plant North near Greifswald has now been put in operation. Thus the GDR produces--in Greifswald and in Rheinsberg--approximately 1,800 megawatts by means of nuclear energy, i.e. approximately 10 percent of the country's total production of electric power. (In the Federal Republic, nuclear power plants presently account for 12 to 14 percent of electric power production.) An additional nuclear power plant is being built near Stendal in Magdeburg Bezirk [GDR administrative unit].

The author sharply criticizes the opponents of nuclear power in the Federal Republic and other Western countries. He tries to make it clear to the

protestors that actions against the nuclear arms race and in support of disarmament are beneficial and good, whereas actions against the peaceful utilization of nuclear energy and the construction of nuclear power plants are bad and harmful. He states that in "capitalist countries, misinformation and erroneous views" concerning the arms race and the peaceful utilization of nuclear energy are deliberately disseminated; consequently, some people transfer the horrible effect of nuclear weapons to the production of nuclear energy and back the demand for total renunciation of the production of any form of nuclear energy. According to the author, the dangers of nuclear energy are to some extent overestimated and are not viewed realistically vis-a-vis the risks that are accepted every day; in the 25 years of peaceful production of nuclear energy, there has not been a single casualty on account of nuclear accidents. Finally, the author criticizes the "fuel monopolies"; he claims they agitate against the construction of nuclear power plants, because they are afraid that an expansion of the peaceful utilization of nuclear energy will jeopardize their profits.

Peaceful Use, Nonproliferation

East Berlin DEUTSCHE AUSSENPOLITIK in German Vol 24 No 9, Sep 79 signed to press 1 Aug 79 pp 41-58

[Article by Siegfried Nitzsche, GDR Ministry for Foreign Affairs: "Peaceful Use of Nuclear Energy and Nonproliferation of Nuclear Weapons"]

[Text] The states of the socialist community have always considered the struggle against the proliferation of nuclear weapons to be extremely important. For many years, the Warsaw Pact states' united and consistent stand in regard to the problem of nonproliferation of nuclear weapons has been expressed in the documents issued at the conferences of their Political Advisory Committee and in the numerous initiatives advanced by the USSR and the other socialist states in the United Nations and the Geneva Disarmament Committee. The demand for nonproliferation of nuclear weapons has also been raised in the documents issued at international conferences of communist parties and workers' parties.

These documents also show that the problem of nonproliferation of nuclear weapons is just one element of an overall security policy that must be oriented toward general disarmament measures offering a long-term guarantee for a lasting peace. In various ways, the GDR has actively supported the demand for nonproliferation of nuclear weapons and has from the outset unequivocally declared itself in favor of the Nonproliferation Treaty (NPT).

The socialist states have proposed a series of measures oriented toward the discontinuation of the arms race and leading to the exclusively peaceful use of nuclear energy for the benefit of mankind. The initiative which the USSR and the other socialist states advanced in the Geneva Disarmament Committee in February 1979 and which calls for the discontinuation of the production of nuclear weapons and for the gradual reduction and final elimination of

nuclear weapons stockpiles is a link in the series of measures oriented toward the consolidation of peace and international security and toward eliminating for good the threat of war from international relations.¹ Guided by this objective, the USSR had submitted to the United Nations' 10th Special Conference on Disarmament a program for concrete actions, the implementation of which would not only put an end to the ongoing, dangerous arms race abetted by imperialism, but would also insure the determined transition to a policy of reduction of the weapons stockpiles, the transition to actual disarmament.

The constructive position of the USSR did not fail to produce an effect. The Final Act of the Special Conference contains basic statements concerning the objectives to be attained in the negotiations on arms limitation and disarmament, with special emphasis being placed on nuclear disarmament and elimination of the danger of a nuclear war. It stands to reason that prominent in this program is the demand for further measures toward prevention of the proliferation of nuclear weapons and for accession to the Nonproliferation Treaty,² for the objective is to eliminate the danger of a nuclear war and to prevent any expansion of the circle of countries possessing nuclear weapons. Guided by this objective and by the realization that the cause of peaceful utilization of nuclear energy would best be served by nuclear disarmament and increased international cooperation, the Warsaw Pact states represented at the conference of the Political Advisory Committee again advocated--in November 1978--the consolidation of the system of nonproliferation of nuclear weapons, provided that all states are enabled--without any discrimination and under effective international control in accordance with the norms of the International Atomic Energy Agency (IAEA)--to use nuclear energy and technology for peaceful purposes.

The results of the Soviet-American summit meeting were welcomed in the whole world. The conclusion of the treaty between the USSR and the United States concerning the limitation of strategic offensive weapons represents an extremely significant step toward the continuation of the process of detente, toward normalization of the international atmosphere and consolidation of world peace. Once SALT II is ratified and comes into effect, it will serve as a stimulus for speedier progress in the negotiations on other problems regarding the limitation of the arms race in the military sector. In the Joint Communique, both states expressed the hope that the conclusion of the SALT II Treaty will be an important contribution to the attainment of the objectives of nonproliferation of nuclear weapons. They affirm their determination strictly to fulfill the obligation assumed by virtue of the agreement on nonproliferation of nuclear weapons; they stressed the importance and the need for tightening the comprehensive security controls of the IAEA and appealed to all states that have not yet done so to sign and ratify the Nonproliferation Treaty. At the same time, both sides expressed their desire closely to cooperate with other countries so as to bring to a successful conclusion the second conference for reviewing the effectiveness of the Nonproliferation Treaty, which is scheduled to take place in Geneva in 1980.³

The rapid scientific-technological progress in the field of peaceful utilization of nuclear energy and especially in the development of the nuclear power industry greatly intensifies the need to prevent the proliferation of nuclear weapons. Nuclear energy is one of the most valuable assets of mankind that have been tapped by human ingenuity. Properly utilized, it can help every nation in the promotion of development and progress. Its misuse can unleash terrible forces of destruction. In the interest of its own survival, mankind must prevent a development in this direction.

From a present-day point of view, in terms of both energy potential and technical practicability, energy derived from nuclear fission is an important alternative to the conventional sources of power. The problem of meeting the steadily increasing demand for energy has been confronting mankind for some time. From an international point of view, the difficulties in meeting the rapidly growing demand for primary energy, the continuous rise in the price of oil and coal, and the threat to the environment posed by the fossil fuels make an increased use of nuclear energy appear imperative. Moreover, the world population is increasing by leaps and bounds; industrialization is progressing rapidly, and sooner or later the traditional sources of energy will give out. Thus many countries regard the accelerated development of nuclear energy as a means of insuring their energy supply.

Toward the end of 1978, 228 nuclear reactors were in operation in 21 countries. The total power-generating capacity of all nuclear reactors in operation amounted to 110,000 megawatts, i.e. 5.8 percent of the total world output of electric energy.⁴ According to estimates of the IAEA, the nuclear reactors will account for approximately 40 percent by the year 2000.⁵

For various reasons, the subject of nuclear energy gave rise to strong emotions. Some capitalist countries deliberately gave out misinformation and false statements concerning the arms race and the peaceful utilization of nuclear energy, in order to cast a doubt on the possibility of putting an end to the arms race. The significant results of the process of detente were distorted. In spite of this propaganda, the people increasingly realize the dangers resulting from the arms race and there is a growing willingness to participate in actions in support of disarmament and discontinuation of the arms race. Never before has there been such a strong public movement for peace and disarmament. However, some people transfer the horrible effect of nuclear weapons to the production of nuclear energy; they back the demand for total renunciation of any form of nuclear energy, thus diverting attention from the immense dangers of the nuclear arms race. And the fuel monopolies on their part are afraid that the expansion of the peaceful utilization of nuclear energy will jeopardize their profits. The dangers of nuclear energy are to some extent overestimated; they are not viewed realistically vis-a-vis the risks that are accepted in everyday life.⁶ There are many things that are fraught with far-reaching dangers of a much larger scope.

In 25 years of peaceful utilization of nuclear energy, there has not occurred a single casualty on account of nuclear accidents. The past years have

proved that the development of the peaceful utilization of nuclear energy is one of the most promising ways of solving the energy problem. This process which in itself is oriented toward insuring the welfare of mankind leads to a proliferation of nuclear materials and technology. At the same time, it increases the danger of proliferation of nuclear weapons. For this reason, the Nonproliferation Treaty is an important international instrument for preventing the emergence of new nuclear states. Its universal and effective implementation is one of the most important tasks in the struggle for arms limitation and disarmament.

Some aspects of the numerous problems concerning the peaceful utilization of nuclear energy and the nonproliferation of nuclear weapons will be discussed in the following.

The Treaty Concerning the Nonproliferation of Nuclear Weapons

There is no doubt that the coming into force of the Nonproliferation Treaty in 1970 had a positive effect on the consolidation of international security. The treaty thus serves the common interests of mankind. The most important result of the first conference for reviewing the implementation of the treaty, which was held in Geneva in May 1975 in accordance with the treaty provisions, was the fact that the treaty partners affirmed their support of the treaty and unanimously demonstrated their willingness to consolidate the system of nonproliferation of nuclear weapons.⁷ Today more than ever, the NPT is a part of international law, a basic standard of international life, which serves all nations. The nonproliferation of nuclear weapons is a universal concern.

However, the NPT is far from being a global treaty. A large number of states keep aloof, largely for political reasons. Some try to justify their position, claiming that the treaty is discriminatory and insufficiently "balanced" and that it serves only the interests of a certain group of states. Some countries hold that the NPT is not a "perfect" treaty.

The Nonproliferation Treaty is a compromise and at the same time it is the best treaty possible under the conditions prevailing at the time of its conclusion and also under the present conditions. This underscores the significance of the NPT: It is the best instrument for preventing the proliferation of nuclear weapons, the only treaty presently in force that is directed toward this objective. This international, multilateral treaty is of special importance, since it represents a considerable obstacle to the further spread of these dangerous weapons of mass destruction.

Articles I and II and the provisions concerning the IAEA control system in Article III contain the basic obligations of the treaty partners: The nuclear powers commit themselves to withhold from the nonnuclear states any nuclear weapons or other nuclear explosive devices, and the nonnuclear states obligate themselves not to produce nuclear weapons or acquire them by other means and not to seek or accept help in the production of nuclear weapons or other nuclear explosive devices. These key articles of the treaty block all ways--

overt or covert--of proliferating nuclear weapons. The obligations assumed by the treaty partners are subject to effective control by the IAEA. Additional provisions serve to round out the NPT. It is necessary, however, to keep in mind the primary objective of the treaty. The treaty contains provisions concerning cooperation in the field of peaceful utilization of nuclear energy (Article IV), but it is not a "treaty concerning the peaceful utilization of nuclear energy." It contains provisions concerning the problem of nuclear explosions for peaceful purposes (Article V), but it is not a "treaty concerning nuclear explosions for peaceful purposes." Article VI articulates the necessity to continue the negotiations on effective measures toward discontinuation of the nuclear arms race. But this does not make the treaty a "disarmament treaty." Viewed from this angle, the treaty prepared the ground for further arms limitation and disarmament measures.

It is in this connection that several states are presently inclined to regard the NPT as an international treaty that can be used for bargaining purposes. Thus, in return for their renunciation of the production and acquisition of nuclear weapons, some nonnuclear states have demanded that the USSR and the United States make concessions in the field of disarmament. However, to link the NPT with concrete, still more complex disarmament steps of the nuclear powers is bound to harm the cause of nonproliferation. Moreover, such an approach is risky, since it is based on the assumption that it is only the nuclear powers that derive benefit from the NPT. At the same time, this approach ignores the fact that it was precisely the nonnuclear states that submitted the proposal for drawing up such a treaty and it does not take into consideration that the treaty makes allowance for the security interests of the nonnuclear states. There can be no doubt that the nuclear powers would protect themselves even if there were more than 20 nuclear powers in the world, which is precisely what the NPT is meant to prevent. Such a situation would be far more dangerous to the nonnuclear states.

The Nonproliferation Treaty's thrust is directed toward the consolidation of the security of all states and of the nonnuclear states in particular. At the same time, it provides for additional internationally binding security guarantees for the nonnuclear states. In Resolution 255, which was adopted by the Security Council on 19 June 1968, and in the identical formal statements issued by the USSR, the United States and Great Britain, these three states commit themselves in the event of a nuclear threat against a treaty member immediately to prevail on the Security Council to take steps against the state threatening to use or actually using nuclear weapons. In order to encourage the states to participate more actively in the consolidation of the nonproliferation system, the Soviet foreign minister in May 1978 declared before the United Nations' Special Conference on Disarmament that the USSR would never employ nuclear weapons against states that have renounced the production and acquisition of nuclear weapons and that do not permit such weapons to be stationed on their territory.⁸

At the 33rd Session of the UN Plenary Assembly, the USSR submitted a new initiative intended to boost the confidence and security of the nations vis-a-vis

the threat and the employment of nuclear weapons: The USSR proposed an international convention for strengthening the security guarantees for the nonnuclear states.⁹ This convention draft goes far beyond the Security Council Resolution 255/68. It strengthens the political and legal security guarantees for those states which through their renunciation of the acquisition of nuclear weapons greatly contribute to the nonproliferation of nuclear weapons. Those states which for diverse reasons did not accede to the NPT, but which do not allow nuclear weapons to be stationed on their territory are likewise given the necessary security guarantees. The Geneva Disarmament Committee has now been charged with discussing measures toward strengthening the security guarantees for nonnuclear states.

By means of the NPT, the circle of states possessing nuclear weapons has been limited to five members--the United States, Great Britain, France, China and the USSR. If all states of the world acceded to the NPT, the restriction of the possession of nuclear weapons to the five nuclear powers would be ensured. But obviously this is not the case. The contradictory international development underscores the necessity to strengthen the system of nonproliferation of nuclear weapons. China's infamous attack on the Socialist Republic of Vietnam, the conflict in the Near East, and the unstable conditions in other parts of the world show that local conflicts are always a threat to world peace; in the event of employment of nuclear weapons, such conflicts would greatly increase the risk of a global nuclear war. For this reason, all potential aggressors such as Israel in the Near East or South Africa must strictly be prevented from acquiring nuclear weapons.¹⁰

At present, three nuclear powers (the USSR, the United States, and Great Britain) and 103 nonnuclear states are treaty members. Approximately 15 states have signed the treaty, but have not yet ratified it. Thus, since the NPT is not yet all-inclusive, it is not fully effective. Of the states possessing nuclear weapons, China and France did not accede to the treaty. However, France has indicated that it would abide by the treaty provisions and refrain from doing anything that could lead to the proliferation of nuclear weapons. Thus, France has been collaborating with other countries exporting nuclear material, equipment or technologies, and--in the interest of nonproliferation of nuclear weapons--has drawn up guidelines for nuclear transfer. Nevertheless, it would be desirable for the sake of increased effectiveness of the NPT that France and China accede to the treaty. This would also benefit the security interests of these states.

A number of states that on account of their economic and scientific-technological achievements in the field of peaceful utilization of nuclear energy are capable of producing nuclear weapons likewise did not accede to the treaty. This group includes Brazil, Argentina, India, Israel, Pakistan and South Africa. Due to the necessity to use nuclear power as a source of energy, the number of these states is increasing.

According to experts, the production in nuclear reactors of plutonium, the base material for the production of nuclear weapons, will by 1980 increase to

between 80 and 130 tons.¹¹ No less than one-third of this quantity will be accumulating in the states not possessing any nuclear weapons. Consequently, the technical and economic capacities for the production of nuclear weapons are steadily increasing. This increases the danger of illicit use of nuclear material for military purposes, especially in those countries that are ruled by militaristic, racist and other reactionary forces and that have not given up the "nuclear option." In fact, the refusal of some states to sign or ratify the NPT can be attributed to the fact that the leading forces in the countries adjoining them either already possess nuclear weapons or are not willing unequivocally to abstain from the development of such weapons. In view of this situation, one must point out that the mere existence of the NPT exerts a certain international pressure on states that pursue an aggressive policy and that are not parties to the treaty.

A serious danger is the willingness of some monopolies to meet the growing need for uranium ore and equipment for nuclear installations without any regard to the pertinent regulations of the NPT. This increases the danger of proliferation of nuclear weapons or other equivalent explosive devices, unless measures can be devised that will prevent the emergence of new states possessing nuclear weapons.

The International Nuclear Market

In the 1960's, the USSR and the United States concluded a series of agreements concerning cooperation in the field of peaceful use of nuclear energy. These two states were the first to engage in the export of nuclear material and technology. At first, they exported primarily research reactors. In 1965, small nuclear reactors imported from the United States were put in operation in Belgium, Italy, Japan and the FRG. The first Soviet nuclear reactor outside USSR territory (capacity 62.5 megawatts) was put in operation in 1966 in the GDR. From the beginning, the USSR channeled most of its reactor exports to the CEMA countries. The USSR is making every effort--both through measures in its own country and through the construction of subcontracting capacities in the respective CEMA countries--to meet the great demand. The cooperation among the countries of the socialist community is carried out within the CEMA framework and on the basis of bilateral agreements. In accordance with the resolutions adopted at the last CEMA conference, it is planned to cooperate on the production of equipment for nuclear power plants. This cooperation will help increase the present potential of the European CEMA countries and of Cuba by more than one-third.¹²

The Soviet Union will also build reactors in a few select developing countries. Finland operates a nuclear reactor imported from the USSR. The USSR is interested in concluding cooperative agreements with certain capitalist countries. The communiqués issued at meetings between leading representatives of the USSR and representatives of France and Great Britain contain clauses to this effect.

Between 1965 and the beginning of the 1970's, research reactors and nuclear power plants were exported above all by the United States, Canada, France and Great Britain. In 1973, the FRG joined this group of exporting countries. A--relatively small--number of high-capacity concerns were established. Since 1973, the FRG and France have been intensifying their cooperation in the nuclear field. Today the combined reactor production capacities of France, Canada and the FRG approximately equal the production capacity of the United States. Between the imperialist states, there began the struggle for export markets, which was further intensified by the emergence of new exporting countries such as Japan, Sweden, Argentina and India. Some of the nuclear reactor monopolies, especially those of the United States, lost their dominant position.

In regard to the proliferation of nuclear weapons, the reprocessing of nuclear material is the most dangerous part in the entire nuclear fuel cycle. The reprocessing plants produce plutonium, which can be used for the production of nuclear weapons. The technological facilities for the reprocessing of fuel elements are generally available. Construction of small, so-called pilot plants with a throughput of a few kilograms of irradiated uranium per year is practicable even in underdeveloped countries. The reprocessing of smaller quantities of irradiated fuel in pilot plants is sufficient for the production of the plutonium quantities necessary for certain types of nuclear weapons. At present, reprocessing plants exist in 18 states; 19 plants are in operation and another 9 are under construction. Most of the installations planned or in operation in nonnuclear states are pilot plants. The three pilot plants that are in operation in India and Israel are not subject to the IAEA security controls. Additional pilot plants are being developed in Italy, Sweden, Brazil, Pakistan, Norway and the Socialist Federative Republic of Yugoslavia. Some of these plants are already in operation. Large-scale plants are being built in the Federal Republic of Germany and in Japan.

The bilateral cooperation between the FRG and Brazil and between France and Pakistan and South Korea, which started in 1975/76, marked the beginning of the marketing of reprocessing installations.

Whereas the USSR and the United States do not offer any reprocessing plants or services, the FRG, France and Great Britain have expanded their capacities. They have offered to export reprocessing installations as well as the pertinent services.

As is the case with plutonium, the production of uranium 233 in the nuclear reactor can lead to the proliferation of nuclear weapons. Aside from the uranium enrichment installations in the states possessing nuclear weapons, additional plants are presently being planned--or are already under construction or in operation--in Canada, Japan, South Africa and Brazil. Furthermore, there are the joint projects--COREDIF and EURODIF, which comprise France, Italy, Iran, Spain, and Belgium, and URENCO, which includes the FRG, Great Britain and the Netherlands. Several countries--e.g. Australia, Italy, Sweden, the United States, France, and Israel--are engaged in

extensive experimental work for the development of new processes or the improvement of existing ones. These efforts are concerned above all with enrichment processes based on Laser technology, which are very economical in that small starting quantities are sufficient for producing weapons-grade uranium.

So far, the only commercial export of uranium enrichment technologies has been arranged by the agreement between the FRG and Brazil. At the beginning of the 1970's, the FRG also transmitted to South Africa the technological know-how for the separating-nozzle process. It appears that in this transfer the FRG's long-term economic interests took priority over efforts concerning the nonproliferation of nuclear weapons. As was disclosed by the African National Congress (ANC), the cooperation between the FRG and South Africa was begun a long time ago, and is being continued. This cooperation led to the construction of a plant in Valindaba, which is not subject to IAEA control. Construction of a commercial plant of greater capacity in Valindaba is planned for 1980; like other installations of this type, this plant would be capable of producing weapons-grade uranium. In combination with the country's large uranium deposits, this enrichment capacity makes South Africa an important economic, political and military instrument. South Africa, which is not an NPT member, was enabled to produce nuclear weapons.

This has now been proved. At the beginning of August 1977, the USSR informed the United States that South Africa was preparing a nuclear explosion in the Kalahari region. International protests forced South Africa to drop the project. The Valindaba plant, a joint project of the FRG's STEAG concern and of the South African UCOR,¹³ was the starting base for the preparation of this explosion. Since the coming into force of the NPT, the press has repeatedly been reporting about the plans of Western countries to supply Israel with nuclear reactors and nuclear fuel without regard to the provisions of the NPT.

At present, breeder reactors are of great importance. In these reactors, the nonfissionable elements uranium 238 and thorium 232, which are available in almost unlimited quantities, are converted into fissionable plutonium 239 or uranium 233, i.e. they produce energy and at the same time nuclear fuel for further nuclear power plants. Thus the fast breeders are a logical and necessary developmental stage within the framework of nuclear energetics. By 1980, the quantity of plutonium 239, an element which has been produced in reactors since 1970, will amount to approximately 360 tons; however, not all of this quantity will be pure plutonium 239. A certain quantity of plutonium is not refined; contained in the fuel elements, it is chemically separated from the elements in reprocessing plants.

In regard to the nonproliferation of nuclear weapons, the operation of breeder reactors is extremely interesting. These reactors produce weapons-grade material in very high concentrations.¹⁴ For the start-up of a 1,000 megawatts breeder reactor block, approximately 3 tons of plutonium are required. It takes approximately 8 to 10 years for the breeders of the so-called first

generation to double the start-up quantity.¹⁵ The research and development work focuses on the development of breeder reactors of the second generation whose doubling time is to be approximately 5 years. This generation will then be operating on the plutonium 239 bred in reactors of the first generation. Whereas breeder reactors of the first generation use mixed fuel elements composed of plutonium 239 and uranium 235, the reprocessing plants could dispense with the production of pure plutonium 239, for reactors of the second generation operate exclusively on weapons-grade plutonium.

At present, the international level of development is determined by the USSR, France, the FRG and Great Britain. An agreement on cooperation in this field has been concluded between France and the FRG. Italy, Belgium and the Netherlands will be participating in this cooperation. Research breeders are operating in the USSR, France, the FRG, Japan, and the USA. Additional research breeders are being planned or are under construction in Italy, Iraq and Brazil. Breeder power plants are in operation in the USSR, France, the United States and Great Britain, while in the FRG and in Japan such plants are under construction. The interest of the FRG and France, the Western countries most advanced in this field, is focused on the future export of the entire line--breeder reactor and reprocessing plant for breeder elements.

From the above data, certain conclusions can be drawn. In the last few years, there has occurred in the nuclear market a shift away from the traditional services, i.e. export of research reactors, nuclear power plants, and fuel elements for reactor recharge; presently, there is available a complete line of products for the entire nuclear fuel cycle. Experience has shown that some imperialist states use their economic potential and the technological knowledge in this field for the attainment of political objectives. They take advantage of some countries' fear of becoming totally dependent on the United States in the nuclear field. The economic necessity and the scientific-technological development, coupled with the power interests of the principal imperialist exporting countries, increase the danger of proliferation of nuclear weapons production. Thus, now as before, it is necessary further to strengthen the political, legal and technical barriers intended to prevent the proliferation of nuclear weapons. Consequently, to expand the system of measures and agreements stabilizing the NPT--which system checks the proliferation of nuclear weapons--is a primary objective of the present time.

Security Controls in Connection With the Transfer of Nuclear Material, Equipment or Technologies

The final document of the first conference for the review of the effectiveness of the NPT stated that the expansion and development of peaceful use of nuclear energy could contribute to the proliferation of nuclear weapons, unless security controls are established.¹⁶ This is the fundamental problem which is presently the subject of intense international debate. How can one protect the states' legitimate right of peaceful use of nuclear energy without aiding the emergence of new states possessing nuclear weapons? These

problems must be solved in the interest of peace and international security. The best means of accomplishing this are the NPT and the IAEA security controls stipulated by Article III.

In comparison with the results of previous disarmament negotiations, Article III of the NPT undoubtedly established the best possible international control mechanism. The IAEA controls are directed toward the nuclear power industry of the nonnuclear states. The objective is to establish that the nuclear materials and installations remain within the scope of peaceful utilization of nuclear energy and are not channeled into the production of nuclear weapons or other nuclear explosive devices. The Article stipulates that nonnuclear NPT members conclude an agreement with the IAEA so as to enable the organization to implement security controls. These control agreements are concluded on the basis of a model agreement developed by the IAEA. There is no doubt that the IAEA security controls are one of the most effective instruments of the NPT. Experience has shown that these controls do not in any way impede the peaceful use of nuclear energy or the scientific-technological development directed toward this objective. On the contrary, all peaceful nuclear activities have been provided with a secure basis.

However, since the NPT is not all-inclusive, not all states are subject to the extensive IAEA security controls. This goes above all for the above-mentioned threshold powers. There have been cases where--in the absence of effective, extensive IAEA security controls--these states received from NPT member-states nuclear material, equipment or technologies. The problem could be satisfactorily solved, if the NPT member-states exporting nuclear material, equipment or technologies required the receiving states to accede to the NPT or to other relevant international agreements concluded on its basis. Thus the entire peaceful activities of the states in question would be subjected to IAEA security controls. The possibility of the production of nuclear weapons would be expressly ruled out. These requirements are in accordance with Articles I, II and III.2 of the NPT. The first steps in this regard have either been taken or are presently being discussed.

The Soviet-British declaration of February 1975 and the joint Soviet-French declaration of June 1977 concerning the nonproliferation of nuclear weapons expressed the conviction that it is possible to take further steps toward providing nonnuclear states with nuclear material, equipment and information for peaceful purposes, but that these steps must be subject to IAEA security controls and must by no means lead to the proliferation of nuclear weapons.¹⁷ In the communique issued at the conclusion of the summit meeting between L. Brezhnev and J. Carter, both sides emphasized the importance of the extensive IAEA security controls and expressed their readiness to continue their efforts toward strengthening the IAEA security controls.¹⁸

In July 1974, the USSR, the United States and Great Britain committed themselves to inform the IAEA about their exports and imports of nuclear material.¹⁹ In the same year, an agreement was reached in regard to Article III.2 of the NPT, to which 22 states have by now acceded. These states

stated that they would export nuclear material and equipment to nonnuclear states only if the nonnuclear states are subjected to the IAEA security controls.²⁰ Thus the procedure concerning the nonproliferation of nuclear weapons has been consolidated not only among the treaty partners, but especially vis-a-vis states that are not parties to the treaty.

A short time after the first conference for the review of the NPT's effectiveness, seven of the most important countries exporting nuclear material, equipment or technology began to formulate a concerted policy concerning the export of nuclear material and nuclear technology and the transmission of know-how. Since the meetings were held in London, the conference was called "London Club." The countries involved were the USSR, the United States, Great Britain, the FRG, Japan, France and Canada. These meetings were significant in that they included two states--France and Japan--which at that time had not acceded to the NPT, but which expressed their willingness to coordinate with the other members their national policy concerning nuclear transfer in the interest of nonproliferation of nuclear weapons. At a later date, the GDR, the CSSR, the People's Republic of Poland, Belgium, Italy, the Netherlands, Sweden and Switzerland, i.e. states that are--actually or potentially--able to export nuclear material and installations or to pass on the pertinent technological know-how, were included in the work of the London Club. In consequence of the discussion on problems concerning nuclear transfer, these countries in 1977 drew up guiding principles and detailed guidelines which the respective states will abide by in their decisions concerning nuclear exports. These guiding principles were transmitted to the IAEA as an expression of the national policy of these states in the field of nuclear transfer and they were published by the IAEA in February 1978.²¹ This concerted policy is based on a common "basic list" of nuclear material and technologies that are exported if certain conditions are met. These conditions include:

- An official commitment by the government of the receiving country, which expressly rules out any utilization of these materials for the production of nuclear explosive devices;
- IAEA security checks of the articles exported;
- Effective protection of the materials or the equipment by the receiving country so as to prevent any illicit utilization.

Whereas the provisions of the 1974 agreement concerning Article III.2 of the NPT apply to nuclear material and equipment, the guiding principles concerning nuclear transfer extend to installations for the reprocessing of nuclear fuel, the enrichment of uranium and the production of heavy water--all of which processes require technical know-how that is either directly transmitted by the supplier or acquired through the import of equipment or essential components. In addition, the guidelines call for restrictions on the transfer of equipment, know-how and material that could be used in the production of nuclear weapons as well as for measures conducive to alternative solutions such as international nuclear fuel centers in place of enrichment or

reprocessing installations in the individual states. The enrichment installations are not to be used for uranium enrichment exceeding 20 percent, unless the exporting state consents to enrichment to higher concentrations. The consent of the exporting country is necessary for the reprocessing, i.e. the separation of the plutonium from the supplied nuclear material after its consumption in the reactor. Articles included in the basic list may be transferred (reexported) only under license from the original supplier and under conditions essentially corresponding to those applying to the original shipment. The guiding principles were supplemented by a document concerning the physical protection of nuclear material.

The guiding principles concerning nuclear transfer effectively support the IAEA security controls. They contribute to the strengthening of the system of nonproliferation of nuclear weapons. However, no agreement has as yet been reached on the proposed ruling that the articles included in the basic list be exported to nonnuclear states only on condition that these states subject all their nuclear activities--not only the exported articles included in the basic list--to the IAEA security controls. Thus, in submitting the guiding principles, the USSR, the GDR, the CSSR and the PRP expressly informed the IAEA of their endorsement of this principle which will determine their future national policy in the field of nuclear transfer. Thus the states of the socialist community support the efforts of the IAEA to make further progress in the field of security control.

The Nuclear Transfer Policy Pursued by Some States

Conscious of the fact that the proliferation of nuclear weapons is a serious threat to international security and mindful of its responsibility as a nuclear power, the USSR exercises restraint in the transfer of nuclear material, equipment or technologies. So far, the USSR has exported nuclear installations only to states that are NPT members or that have assumed obligations in keeping with the NPT and it has not exported any enrichment or reprocessing technologies. Spent fuel elements imported from the Soviet Union must be returned to the USSR.

In the last few years, a number of capitalist countries announced the observance of certain principles and guidelines--generally including the London guidelines in combination with the IAEA security controls--in the export of nuclear material, equipment and technologies. In addition, Canada and Sweden stated that they export nuclear material, equipment or technologies only to states that are NPT members or that allow all of their nuclear activities to be subjected to IAEA security controls. In August 1977, Australia defined the conditions applying to the export of uranium, which now is subject to government approval and extensive IAEA security controls. The agreement concluded with Finland can be considered a model: This agreement stipulates extensive IAEA security controls, makes any reprocessing and enrichment contingent upon the approval of the Australian Government and contains provisions regulating any reexport. Other states--e.g. France in December 1976--discontinued the export of reprocessing plants and technologies. In June

1977, the FRG announced a similar embargo, pointing out, however, that existing treaties and their implementation would not be affected--a reference above all to the agreement between the FRG and Brazil.

In 1977, the nuclear energy policy of the United States underwent extensive changes which in April 1978 resulted in a special law concerning the shipment of enriched uranium and nuclear installations. This law defines the conditions applying to the export of nuclear material. Thus the receiving countries must subject themselves to IAEA security controls. In addition, the law stipulates a moratorium for the export of nuclear material; it contains provisions concerning the reexport of spent fuel rods to the United States and it prohibits the construction of reprocessing and enrichment plants. At the same time, it was demanded that the existing agreements concerning the export of nuclear power plant equipment and nuclear material be renegotiated.

Consequently, 25 bilateral and 2 multilateral agreements (EURATOM and IAEA) are presently being renegotiated. All countries interested in concluding new agreements with the United States must accept the provisions of this law. To a certain extent, the law restricts the United States' export possibilities. On the other hand, the law contains provisions allowing the president to issue special regulations.²² According to some observers, these decisions were prompted by economic interests rather than by the fear that plutonium could also be used for the production of nuclear weapons. In the developed capitalist states, especially in the FRG and in France, the U.S. policy met with strong resistance.

One should not overlook the fact that the failure of the London Club to include in the guidelines a provision concerning the subjection of all nuclear activities to IAEA security controls leads to economic competition between those countries that insist on extensive security controls and those that want security checks only for export articles. Previous experience has shown that the importing countries turn to those states whose requirements are more moderate. This situation has been taken advantage of by a number of countries, including South Africa which between 1977 and 1978 considerably increased its uranium production.²³ These loopholes are quite dangerous to international security.

Some countries, especially nonaligned countries, fear that restrictions on the export of nuclear material, equipment and technologies will impede the peaceful use of nuclear energy and the access to the most advanced nuclear technologies. At the same time, objections are being raised against the guiding principles concerning nuclear exports and against the extensive IAEA security controls. As can be shown, some of those countries that did not accede to the NPT are especially active in this regard. At a conference held in Belgrade in December 1978, some nonaligned states drew up a program along these lines which is to be submitted to the summit conference scheduled to convene in Havana in 1979. The objective is to hold one or several conferences on the peaceful use of nuclear energy.²⁴ At the 22nd session of the IAEA Conference in September 1978, a large number of countries stated that

such a conference could be held within the framework of the IAEA which is sufficiently experienced in this field.

In the summer of 1977, the United States proposed an international meeting of experts for the purpose of studying the nuclear fuel cycle. This proposal has become known under the name of INFCE. The objective was to find the best scientific-technological solutions to the problem of limiting the danger of nuclear proliferation inherent in the peaceful use of nuclear energy without jeopardizing the energy supply or the development of nuclear energy for peaceful purposes. Obviously, the United States was primarily interested in recovering the ground lost to the countries advanced in the nuclear technology of breeder reactors. The introduction of breeder reactors in industry was to be put off for an indeterminate period, in order to catch up in the construction of breeder reactors. The United States did not curtail their basic research and planning programs. New installations and laboratories were built and continue to be built.²⁵

The discussion at the organizing conference in the fall of 1977 and at the first plenary conference in November 1978 clearly showed that many capitalist countries are pursuing above all economic objectives. The cooperative efforts of the socialist countries are based on the desire to strengthen and further develop the present system of nonproliferation of nuclear weapons. They are not motivated by economic, commercial or trading interests. In the socialist states, the planning concerning the development of nuclear energy has anyhow been for the long term. The obligations ensuing from the NPT have fully been met. As regards the nuclear fuel cycle, international solutions either have been implemented or are being planned, which also from the point of view of prevention of nuclear proliferation is the most progressive approach.

The IAEA likewise is actively participating in the INFCE. It should be pointed out that the organization seeks international solutions in regard to the storage, enrichment and reprocessing of nuclear material. The establishment of international centers for the nuclear fuel cycle appears to be one of the approaches practicable. According to an IAEA study on the subject, these centers would be quite advantageous in terms of economy, operation and security. Large-scale, centralized installations could curb the individual country's ambition to develop its own enrichment and reprocessing installations; they could meet the demand for a steady supply of fuel and could make more effective the technical aid for developing countries. In addition, the implementation of security controls would be facilitated and the physical protection of nuclear material would be strengthened.

At present, the IAEA is examining the possibility of an international convention concerning the storage of plutonium and spent nuclear material. The legal basis for this is provided by Article III of the organization's by-laws. International agreements of this kind can facilitate the large-scale use of nuclear energy for peaceful purposes without increasing the danger of proliferation of nuclear weapons.

The Physical Protection of Nuclear Material

The accelerated global increase in the peaceful use of nuclear energy and the increase in the number of plants and in the quantity of nuclear material make it imperative to prevent the possibility of sabotage of nuclear installations, of covert or overt theft or unauthorized use of nuclear material. For this reason, additional rigorous measures are required for the protection of nuclear material--in regard to storage, transport and use--and of nuclear installations. With the support of its member-states, the IAEA drew up recommendations and illustrations as to what the organization's member-states could do to establish national systems for the physical protection of nuclear material and equipment or to improve their quality and effectiveness.²⁶ On this basis, the countries exporting nuclear material, equipment or technologies adopted in 1976 a document concerning the physical protection of nuclear material, which was appended to the guidelines concerning nuclear exports and submitted to the IAEA for publication. This document contains recommendations concerning the criteria of physical protection levels. In its final document, the first conference for the review of the NPT's effectiveness raised the demand for an international convention on the physical protection of nuclear material. The establishment of a convention open to all states, which would be an effective instrument against the unauthorized use of nuclear material and against terrorist acts against nuclear installations and transports, would at the same time significantly strengthen the system of nonproliferation of nuclear weapons. The IAEA is presently conducting discussions in preparation for such a convention.

FOOTNOTES

1. CD/4 1 Feb 79 (introduced 6 Feb 79).
2. Resolutions and Decisions of the General Assembly. Tenth Special Session, 25 May-30 Jun 78. Official Minutes (German), Supplement No 4 (A/S 10/4), Article 36, p 13; Article 65, p 20.
3. Joint Soviet-American Communique, NEUES DEUTSCHLAND, Berlin, 19 Jun 79, p 4.
4. "IAEA--the Annual Report for 1978," GOV/1973/Suppl. 1, 13 Jun 78.
See also "World Armaments and Disarmament," SIPRI, Stockholm, Yearbook 1979, pp 305-306.
5. See Fuchs/Schumann, "The Importance of Nuclear Energy for Meeting Future Energy Demand," ENERGIETECHNIK, Berlin, No 5, 1977, pp 187 ff.
See also "The Prospects of the Power Industry," NEUES DEUTSCHLAND, Berlin, 21/22 Apr 79, p 12.
6. See A. Alexandrow, "Scientific-Technological Progress and Nuclear Energetics," PROBLEME DES FRIEDENS UND DES SOZIALISMUS, Berlin, No 6, 1979, pp 743 ff.

7. NPT/CONF/35/I Review Conference of the Parties on the Treaty on the Non-proliferation of Nuclear Weapons. Final Document, Part I, Geneva 1975, pp 1-2.
8. A/S-10/PV 5, 26 May 78, pp 28-30.
9. A/C. 1/33/PV 20, 31 Oct 78, pp 2-18.
10. "The Near-Nuclear Countries and the NPT," SIPRI, 1972, p 6.
"The Nuclear Age," SIPRI, 1975, p 79.
See also Resolutions and Decisions of the General Assembly ..., Article 12, p 7.
11. "World Armaments and Disarmament," SIPRI, Yearbook 1979, p 325.
12. "The 23rd Session of the CEMA Council," NEUES DEUTSCHLAND, Berlin, 30 Jun/1 Jul 79, p 6.
13. SECHABA. Official Organ of the African National Congress of South Africa, Vol 9, No 11/12, Nov/Dec 75.
"The United Nations Disarmament Yearbook," United Nations, New York, Vol 2, 1977, p 123.
Cervenka/Rogers, "The Nuclear Axis--Secret Collaboration Between West Germany and South Africa," London, 1978, pp 279 ff.
14. According to UN experts, 8 kilograms of 90 %-plutonium 239 are sufficient for producing a nuclear warhead; A/6858, 10 Oct 68.
15. Doubling time: The time (in years) it takes for a breeder reactor to double its original fissionable fuel.
16. NPT/CONF/35/I Review Conference of the Parties ..., p 3.
See also Klein/Engelhardt, "Weltproblem Abruestung" [Disarmament--the Global Problem], Berlin, 1979, p 179.
17. Joint Soviet-British Declaration Concerning Nonproliferation of Nuclear Weapons, 17 Feb 75, NOVOYE VREMYA, Moscow, No 8, 1975, pp 27-28.
Soviet-French Declaration Concerning Nonproliferation of Nuclear Weapons, 22 Jun 77, NEUES DEUTSCHLAND, Berlin, 23 Jun 77.
18. Joint Soviet-American Communique, NEUES DEUTSCHLAND, Berlin, 19 Jun 79.
19. Notification to the agency of exports and imports of nuclear material, INFCIRC/207, 26 Jul 74.
20. Communications received from member-states regarding the export of nuclear material and of certain categories of equipment and other material, INFCIRC/209, 4 Sep 74.

21. Communications received from certain member-states regarding guidelines for the export of nuclear material, equipment or technology, INFCIRC/254, Feb 78.
22. "The Nuclear Non-Proliferation Act. World Armaments and Disarmament," SIPRI, Yearbook 1979, p 311.
23. "World Armaments and Disarmament," SIPRI, Yearbook 1979, p 321.
24. Press Release GA/5723, 5 Jan 78, Res. 32/50.
25. Morozov, "Atoms for Peace," NOVOYE VREMYA, Moscow, 1978, p 13.
26. "Physical Protection of Nuclear Material," INFCIRC/225.

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ARGENTINA

CASTRO MADERO DEFINES NUCLEAR PLAN, AMBITIONS

Buenos Aires LA NACION in Spanish 16 Sep 79 Supplement pp 4-6

[Interview with RAdm Carlos Castro Madero, National Atomic Energy Commission Chairman, by Julio Orlone: "Nuclear Energy - The Argentine Way"; date and place not given]

[Text] It is possible that, around the year 2000, Argentina, in addition to retaining its nuclear leadership in Latin America, may hold first place among nations that use atomic energy only for peaceful purposes.

RAdm Carlos Castro Madero, chairman of the CNEA (National Atomic Energy Commission), has a doctorate in physics and is a graduate of the Balseiro Institute. He was a professor of nuclear physics at the School of Exact and Natural Sciences and he was also a professor of reactor physics at the Balseiro Institute. He is a member of the scientific advisory committee of the IAEA. He has been heading the CNEA since 1976. During his term of office, the executive branch approved Decree 3183, dated 1977, spelling out the general and specific objectives of Argentina's nuclear policy. In January 1979, Decree 302 launched the Nuclear Plan.

Question: What are the goals of the Nuclear Plan?

Answer: In 1977 the Argentine Republic set itself a general objective in the nuclear field: "Step up the scientific, technical, and industrial effort in the nuclear field for peaceful purposes and utilize the country's human and natural resources in this field in order to help strengthen national development." That decree also listed specific objectives. I will summarize some of them for you: Installation of nuclear power plants when suitable for the country, attainment of complete self-sufficiency in the nuclear field, development of all peaceful applications (medicine, industry, science, agriculture), and safeguarding the protection of the population and the environment against the possible harmful effects of nuclear energy.

Question: Is the attainment of these objectives and the implementation of the Nuclear Plan the exclusive task of the CNEA?

Answer: Those objectives cannot be attained only through the effort of the CNEA, the advisory and executive body for the Nuclear Plan. This is why the CNEA calls on all sectors of the nation to participate, provided they have a capacity to make contributions. Among those sectors I would fundamentally like to stress two: Argentine's industry and engineering. Industry involved in the manufacture of components for nuclear power plants and engineering in the area of knowhow—in other words, how to make those components which, when combined, will make it possible to generate electric energy.

Question: What are the plan's definitions? What advantages do they present?

Answer: Among the policies worked out, there is one that is very clear: Opt for the line of reactors operating on natural uranium and moderated by heavy water, a matter spelled out for the first time in 1977. Another aspect is the sequence involved in the construction of the power plants. It is expected that the first one will become operational in 1987, the second one in 1981, the third one in 1994-1995, and the last one in 1997.

Through this Plan we tried to enable industry to have a guaranteed program which will make it possible to calculate the investments that are necessary so that we may get an economical return. In other words, the idea is to make sure that industry will not put its investments in a single power plant, as has happened so far. In second place, it offers the great advantage of improving the government's negotiating power on the international market since the country will not have just one power plant but a complete program. In third place it entails the convenience of permitting the precise definition of the capacities which the complementary installations must have (fuel element factory, heavy water plant), by what date they must be ready to go into operation, what effort has to be made in terms of uranium analysis and prospecting. Besides, the plan makes it possible to anticipate the human resources requirements and their training. This is the moving force behind the execution of this plan.

Question: How will the deadlines for the installation of the power plants be determined?

Answer: The commissioning phase was programmed with an interval of four years in the beginning and three and a half years later, followed by three years; these deadlines were developed so that we would progressively be able to acquire a growing capability; besides, these intervals will permit the application of resources used during each phase while we build the next power plant and there will be no idle time and no duplication of effort. But the other thing here is that we cannot have a very short sequence because that would saturate the country's response capacity and this in turn would obligate us to resort to the purchase of power plants in "turnkey" condition.

Outlook for the 21st Century

Question: Will Argentina be a nuclear power in the year 2000?

Answer: According to the plan drawn up by the energy secretariat, we figure that the country's hydroelectric resources will have been exploited to the maximum around 1997. From then on, the only option left to the country is the intensive utilization of nuclear energy. This means that it will be necessary to build one nuclear power plant per year.

Question: Will the Nuclear Plan make this possible?

Answer: This Nuclear Plan is adequate; it is a realistic plan, a well-dimensioned plan, which will enable the country progressively to acquire capabilities in the construction and operation of nuclear power plants. That will enable us—starting with 45 percent or 50 percent at the Atucha II power plant—to achieve 80 percent national participation in the last stages. This will give us optimum conditions for going into the future phase of intensive construction of nuclear power plants without having to resort to so-called foreign help (power plants in "turnkey" conditions, different technologies, different types of reactors), something which would considerably affect the nation's decision-making power.

Question: What will guarantee that decision-making power?

Answer: To enable the country to maintain control, we have issued competitive bidding invitations to enterprises that can supply natural-uranium and heavy-water power plants; that involves two outfits: The AECL, of Canada, and KWU [Power Plant Union] of Germany. The latter can deliver a complete power plant. In the conventional sector, the sector of the turbogroup, the AECL requires the participation of other enterprises to complete installation. As part of this competitive bidding effort we also figure on the construction of the heavy-water plant which is fundamental in acquiring real independence.

Question: What will be the degree of Argentine participation in the accomplishment of all this work?

Answer: In the competitive bidding invitations we are asking for the establishment of an engineering company which would be made up of the Argentine Nuclear Enterprise, a government outfit, representing the CNEA, and the foreign company that gets the contracts. Through this binational enterprise, the CNEA will be able—during the phases in which we have short-comings—to learn how to run the construction of such projects. We programmed the participation of that enterprise on a decreasing scale so that, as the plan is implemented, we will be able to arrive at the final power plant with almost 100 percent Argentine participation. In other words, the fourth power plant could be build completely by the

Argentines. That fundamental idea will be implemented gradually as the country acquires skills and demonstrates that it is capable of attaining that level of technological advance.

Question: Does the CNEA want to handle all of this work?

Answer: The CNEA will assume management of the project. It will not ask for "turnkey" power plants. But it will assume that management function through the engineering company I mentioned; that company will draw up the blueprints, it will handle the industrial architecture and the basic engineering, and it will organize the various bidding packages.

Participation of Private Companies

Question: What will the role of private industry be?

Answer: Starting with the competitive bidding, we will try to make sure that Argentine engineering companies will take over the detail engineering phase. Parallel to that we will call upon our domestic industry to supply components. Within the CNEA, we created the Nuclear Industry Integration Committee with the mission of advising the CNEA's chairman on matters pertaining to the promotion of domestic industry regarding the construction of nuclear power plants. That committee will have to determine what enterprises are qualified and it will also have to study the way in which to transfer new technologies to them.

Question: How will technology of foreign origin be incorporated?

Answer: In our competitive bidding invitations we are asking foreign companies to contemplate the possibility of transferring licenses and patents and to train our domestic industry so that it may be able to produce components in the future. Here again we can detect the effort aimed at the objective of achieving nuclear self-sufficiency.

Question: Will the CNEA manage the nuclear power plants directly?

Answer: So far, the commission operates the Atucha Power Plant. That is fundamental for the CNEA because Atucha is becoming the center of all activities which are being carried out in the institution in the field of research and development. In this way we are concentrating our efforts. Besides, this permits direct contact between CNEA personnel and nuclear technology and this naturally in turn permits the refresher training of engineers and scientists. It is most important for the CNEA to have Atucha under its control. It completes the entire chain involved in technology generation: Basic research, applied research, exploratory and advanced development, engineering development, and, finally, production.

Question: Will this pattern be retained in the future?

Answer: Except as far as Atucha is concerned, we do not know in this respect what the future role of the CNEA will be. It has not yet been spelled out. The executive branch will decide whether the CNEA will continue to operate all nuclear power plants or whether those plants will be operated by provincial agencies or the federal government.

Argentina and the World

Question: What is Argentina's effort abroad?

Answer: Argentina is involved in intensive international cooperation in the nuclear field. For example, we hold fourth place in the assignment of experts to the IAEA in order to help developing countries in various aspects involved in the nuclear industry. We have Argentine experts assigned to aid missions; these people are being rotated in accordance with the various fields of action and the requests received from those countries. There is one thing that makes Argentina outstanding among developing nations: This is the cooperation agreement with the Republic of Peru which consists of the installation of a research center, with an irradiation reactor (this is not actually a power plant), a radioisotope production laboratory, a physics laboratory, and protection and safety laboratories.

All of that gives Argentina a significant status in the international area.

Question: What is your opinion on stories concerning the trip by the German minister Lambsdorff to Brazil and Argentina?

Answer: As far as the Brazilian-German agreement is concerned, I have nothing to say. As far as Argentina is concerned, these are rather adventuresome stories since Germany is an offeror country and is considered as such. However, no decision has as yet been made on this matter and this is being handled by the proper people. In this case, the enterprises involved--Canadian, Italian, German, English--submitted their offers and the proper decision will be made. When the country is on the eve of making such a significant decision, there are certain interests that get moving and that would use any means in order to tilt the scales in their favor. But there is not the slightest doubt that we are going to retain absolute control over this technology in the hands of the government.

Question: We Argentines realize that the CNEA is an efficient agency which does what it is supposed to do. To what do you attribute this image?

Answer: I believe that there is one very fundamental reason for this appreciation--and I want to thank the magazine LA NACION for printing this. Ever since the establishment of the CNEA, we have had continuity in the policy that was carried out and I believe that this is the basis for any success. In other words, from 1972 until today. But besides, the

successes achieved since 1976 were due to the determined support from the federal government. Policy continuity and government support logically are bound to bear fruit. That continuity, that permanent and silent effort, ever since 1952, has enabled us to shape up an esprit de corps among the personnel and at the same time it enabled us to train a group of highly-skilled experts, as demonstrated by the achievement of this mission and the respect which Argentina enjoyed throughout the world in the nuclear field.

The Perils of the Atom

Although it is rather old hat, the reference to the sorcerer's apprentice, who sets uncontrollable forces in motion, is almost inevitable here. The power of the atom however seems to be more manageable as technology becomes more familiar with what the nucleus is and with the submicroscopic world of elementary particles. But new problems spring up as a result of industrialization and they are added on top of the ever-present fear of the holocaust of nuclear war. Nuclear waste, power plant accidents, environmental contamination due to radiation, and the termination of the useful life of atomic power plants are the risks that keep growing along with the development of the nuclear industry.

Ecology versus development. This contradiction apparently insoluble, is being countered tenaciously by experts on atomic matters. Detailed studies on the risks connected with the various types of energy sources seem to demonstrate that nuclear energy is one of the safest forms of getting energy in the entire production cycle.

Accidents, such as the recent one at Three Mile Island—are magnified beyond proportion, according to the defenders of the nuclear auction. In Argentina, along with every step taken by the CNEA in the installation of power plants, processing plants, or laboratories, we assign priority to the safety and environmental protection factors in accordance with the recommendations from the International Commission for radiological protection. In Argentina we work far below the minimum public risk doses. Environmental discharges of nuclear materials are always considerably below those coming from sources of natural radiation.

The two most complicated aspects of the nuclear-electric power generation process—waste and the closing of power plants—however are problems that are still very far removed from Argentina. The first of these is far removed because the type of natural-uranium reactor does not necessarily imply the reprocessing of spent fuel which is the main source of harmful radiation. The second one obviously has to do with the fact that Argentina has several years yet in which to think in terms of opening, not closing any power plants.

The Nuclear Plan

The Nuclear Plan features stages and ways of obtaining the objectives of the Argentine Republic in the nuclear field by 1997. Special attention was devoted in its programming to the role of the provinces whose participation is being promoted in various ways. Designed in coordination with the Secretariat of State for Energy, the plan is intended to promote the generation of electricity from nuclear sources with a view to a not too distant future when the rich hydroelectric potential will have been utilized to the maximum extent.

Power Plants Under the Plan

Argentina has an operating power plant at Atucha and another one under construction at Embalse. To those we can add, continually, the four power plants which will also produce electric energy and which the Nuclear Plan contains for 1987 (Atucha II), 1991, 1994-1995, and 1997. However we have not yet picked any names for the future power plants, nor have we selected their locations; this is a matter requiring consideration of the soil quality, the proximity of water, weather factors, and the vicinity of population centers. Projects of this size must be contemplated in terms of strict safety measures which will reduce the environmental impact to the maximum.

The four power plants will have a capacity of 600 Megawatts although we cannot rule out the possibility that, after Atucha II, we will decide to increase the capacity of some of them which have not yet been the subject of competitive bidding.

But the plan is not confined to energy production. It is also concerned with uranium prospecting, the development of exploitation of this mineral, the opening of new deposits, and everything having to do with the fuel element production cycle, as well as the zircalloy containers which will hold the uranium dioxide pellets in the reactor. The program of supplies for the power plants also include the study of the performance of fuel before and after their utilization.

Radioisotopes and Radiation

Argentina exports radioisotopes. This gives us an idea of the future importance of this sector in nuclear industry aimed at uses in medicine, food preservation, as well as agricultural and industrial applications. The CNEA is very busy in the area of food preservation at the Ezeiza Atomic Center where food is treated with ionizing radiation for processes concerned with the inhibition of buds on tubers, radiation disinfection, radioactive disinfection of food attacked by insects and parasites, radioactive pasteurization and radioactive sterilization for the purpose of conserving food. Radiation furthermore can improve some foods, making it easier, for example, to peel an orange or making meat more tender; or one

can cook beans in less time and this also makes it possible to shorten the vine ripening time although this may not look at all orthodox to the connoisseur.

Research

The CNEA is characterized by a sustained research and development effort in many directions. Some of them are rather showy and are part of the Nuclear Plan phase; they include research on nuclear fusion (we are trying to control the process which causes the hydrogen bomb to explode), experimentation in the utilization of solar energy for industrial uses and for the generation of electric energy.

5058

CSO: 5100

NUCLEAR DEBATE REOPENED BY ATTEMPTED NEWSPAPER SEIZURE

Sao Paulo VEJA in Portuguese 29 Aug 79 pp 88-91

[Article by Carlos Struwe: "Chain Reaction"]

[Text] A wild shot fired from Brasilia, whose target was the Sao Paulo newspaper GAZETA MERCANTIL, made a direct hit last week on the powder magazine where the question of the Brazil-Germany nuclear agreement was stored. The uproar created by the government reopened the chronic debate on the agreement at a time when the government really wanted to keep it under wraps. This was the result of the unsuccessful attempt to prevent GAZETA MERCANTIL, a daily with a circulation of some 45,000, specializing in economy and finances, from publishing the main items of a "stockholders agreement" signed in December 1975 whereby the German company KWU began to dictate the rules for the operation of NUCLEN [Brazilian Nuclear Corporations Engineering, Inc.], a subsidiary of NUCLEBRAS [Brazilian Nuclear Corporations], responsible for planning nuclear reactors and, therefore, directly involved in the transfer of technology to Brazil.

The ill-fated operation began at 0200 on Wednesday morning when four agents of the Federal Police, without showing any credentials or written authorization, seized, at the doors of the newspaper O ESTADO DE SAO PAULO where the GAZETA MERCANTIL is printed, the plates for pages 1 and 10 of that day's edition of the morning paper which contained the article "The Power of Decision in NUCLEN." Notified, the chief editor of GAZETA MERCANTIL, Roberto Muller Filho, questioned the Federal Police of Sao Paulo as to who authorized the seizure. He then heard a vague answer that the agents were carrying out "orders from Brasilia." After notifying the owner of the newspaper, Federal Deputy Herbert Levy of the National Renewal Alliance [ARENA], Muller ordered that copies of the material seized, which were being kept in the GAZETA MERCANTIL editorial offices, be printed. The edition arrived normally to the subscribers, who are the large majority of the readers of the newspaper. However, part of the copies destined for street sale was also seized at the newsstands of Sao Paulo during the morning.

In addition to the perplexity caused by the first outbreak of arbitrariness against the press by the Figueiredo administration, the episode, because it involves the nuclear agreement, provided new fuel for arguments about the future of that program, which is surrounded by secrecy by the government and by doubts by society. It was confirmed that control of the purchases of equipment is exaggeratedly in German hands, and at the same time, the degree of harm that this situation causes national industry was determined with some accuracy.

Thirty-six Questions

Worried about what will happen to his newspaper, Herbert Levy managed to make contact with the government. After an inconclusive talk on the telephone with Minister of Social Communication Said Farhat, Levi was received by Minister of Justice Petronio Portella to whom, in theory at least, the Federal Police is subordinated. Levy neither learned exactly what happened nor did the government explain what it did. Harassed by 36 questions on the subject, thrown at him by reporters accredited to Planalto Palace, Said Farhat admitted the seizure but refused to comment on the merits of the article. The Military Office of the Presidency of the Republic had been alerted on Wednesday night by SNI [National Intelligence Service] Chief Gen Otavio Medeiros, on the basis of a report from Minister of Foreign Affairs Ramiro Saraiva Guerreiro, that GAZETA MERCANTIL was preparing to publish a document considered "confidential." The explanation: That same night, having in his possession a copy of the stockholders agreement signed by NUCLEBRAS and KWU on the activities of NUCLEN, a GAZETA reporter in search of official comments on the meaning of that trade agreement, checked with Itamarati, among other government sources. It was thought there that the document was the still unpublished "Protocol of Brasilia," complementary to the agreement itself, which was signed by the foreign ministers of the two countries in Bonn in June 1975, and like the latter, signed at a Foreign Ministry level. No one supposed that it was the operational agreement between NUCLEBRAS and KWU for the simple reason that long excerpts of that text had already been published in the 18 April edition of the newspaper O ESTADO DE S. PAULO. With the title "KWU, Total Control in the Transfer of Technology," it was even illustrated with a reproduction of the first page of the document on which can be seen the seal of 'Confidential.'"

Elastic Definition

Under the pretext of that classification, Batista at one time refused--November last year--to turn over to the Senate Investigating Committee investigating the Brazilian Nuclear Program, the stockholders agreements of the NUCLEBRAS subsidiaries, such as the one which refers to NUCLEN, mentioning on that occasion Decree 79099 dated January 1977, which deals with "secret, confidential and restricted documents." Prepared by the then chief of the military household, Gen Hugo Abreu, that "regulation for the safeguarding of secret subjects" states in the fourth of its 101 articles that the classification of "Confidential," (more restricted than "restricted" and less so than "ultrasecret" and "secret") "shall be assigned to subjects the knowledge of which by unauthorized persons may be

harmful to national interests, individuals or entities or create administrative embarrassment."

Such an elastic definition can actually cover the NUCLEBRAS-KWU agreement--although perhaps an argument could be made as to what harm or embarrassment the revelation of a strictly commercial document could cause national interests or the administration. In any case, the problem is another. In the first place, according to the decree invoked by Batista, the manner in which the agreement became officially a secret subject reveals some deceit.

This is so much so that in view of the paradoxes provoked by its mania for secrecy, NUCLEBRAS now receives an order from Planalto to send to Congress all of its secret papers. The decree, which protects secrecy states, among other things, that such documents have at the time the seal of "Secret Controlled Document" and also the "registry number, office, title of the document, department of origin and department of control, and when necessary, instructions which regulate its controls." Therefore, the mere seal of "Confidential" unaccompanied by these other indicators does not transform a paper into a state secret. Batista, however, promised to explain the confidential contracts signed with the Germans to the members of the Senate Investigating Committee at a closed-door session to be held in the second half of September. For the government, in any case, the damage had already been done. Politically the episode became a series of errors. Minister of Foreign Affairs Saraiva Guerreiro, if the story which included him in this merry-go-round is true, found himself in the situation of trying to prevent the publication of a document which he actually supposed to be another. The Military Office of Planalto Palace tried to prevent a newspaper from circulating with the article in it and did not manage to do so. Minister Petronio Portella, the only authority with the legal power to order the seizure of a newspaper, knew nothing about it on the night of the operation. The following day, he accepted the responsibility for what had happened but without showing the documents which made him officially responsible. On Friday, he was to say that the GAZETA article "could even create problems of an international nature because it could appear that the government itself or its officials had released the document," a supposition which does more justice to the functional discipline of the minister than his own intelligence.

Informal Moratorium

In addition to the upheaval it created within the government, the action against GAZETA MERCANTIL suddenly revived the polemic around the nuclear agreement. And what is even more serious, that took place on the same week in which the German minister of economy, Count Otto Lamsdorff was visiting the country. Between Monday and Tuesday he toured the highest offices of Brasilia, without foregoing that of President Joao Figueiredo, for the purpose of injecting a little more enthusiasm into the present Brazilian position toward the agreement. Indeed, with the American

pressures of 1976 against the more delicate aspects of Brazil-Germany nuclear cooperation almost forgotten--which at that time led the Geisel administration to defend the integral fulfillment of the agreement as a question of national sovereignty--Brazil went on to view with substantial doses of skepticism that which a few years back it had accepted as an unquestionable priority.

Unfortunately for the German minister, the document published by GAZETA MERCANTIL suggests that regardless of the number of KWU-brand reactors Brazil may buy, control of the process of transfer of nuclear technology remains in German hands. In fact, the agreement between NUCLEBRAS and KWU for the operation of NUCLEN leaves little doubt in that respect. Although the Brazilian side holds 75 percent of the shares of the company, the power of decision belongs in practice to the partner who contributes with only 25 percent of the capital of NUCLEN. Three of the five members of the board of directors are from NUCLEBRAS, however, the technical and the sales directors, the posts which really count, are from the KWU. Moreover, "all important planning decisions and all technical decisions," approved by the board of directors are subject to the evaluation of a technical committee.

That committee consists of "four members appointed by KWU with the right to vote, and one member appointed by the superintendent (appointed by NUCLEBRAS) as an observer." This means that he has no right to vote. It is up to the committee, in addition to other prerogatives, to have the final word on the purchase of nuclear equipment in Brazil or Germany. According to GAZETA MERCANTIL, the stockholders agreement foresees that the Brazilian share in the components for the nuclear powerplants, even in the eighth unit, will not exceed 30 percent of the equipment for the turbogenerator complex, essential in a reactor. Finally, the agreement states that even in the hypothesis that the number of shares held by KWU in NUCLEBRAS falls below the present 25 percent, the German company will preserve "all the rights" stipulated in the document.

Unfair Agreement

A Brazilian technician who took part in the negotiations says that the agreement prepared in Brazil was completely changed by the KWU board of directors three days before it was signed. Fierce criticisms of the terms of that agreement surfaced last week in several places. In addition to scientists, businessmen and politicians, jurists specializing in business law severely criticized the document. "The agreement is so one-sided that it borders on illegality," declared one of the most veteran negotiators of international contracts in Rio, "I have never seen anything like it."

In its 3.5 years of life, NUCLEN under the real control of the KWU, has obliged Brazil to buy equipment from Germany which can be perfectly well produced by national industry.

Here are some examples: NUCLEN authorized a national company, Jean Leutaud, to provide secondary filters for water used in the cooling systems of the Angra reactors. However, the Germans demanded that the company contract technical aid services in Germany. Such services were going to cost so much that the company gave up the entire business.

Two companies located in Brazil: Ishibras and Mecanica Pesada, offered to sell diesel motors for the emergency system of the nuclear powerplant. Ishibras, whose motors are the same as the German, was qualified since its motors use the same French technology patented by Semt-Pielstik and used in Germany. The KWU technicians accepted the Ishibras motor but demanded that the company have technical aid from the Struwer Company in Germany. The price to be charged for technical aid was going to be higher than the price of the motor itself.

Brazilian businessman Claudio Bardella, one of the contractors of the nuclear program, was forced to buy rolling bridges in Germany which could have been built in Brazil.

As a company created to design nuclear powerplants, NUCLEN should naturally plan Angra II and Angra III. However, in 1976 a new contract was entered into by NUCLEBRAS whereby 80 percent of the plans would be made in Germany by the KWU itself and sold to Brazil for \$300 million. If the task were performed to NUCLEN, the expenditure would be accounted for in cruzeiros. Since this did not take place, the transfer of that sum in dollars to Germany, opened up a negative balance in Brazil's accounts.

The controversy on the nuclear agreement, rekindled by the disastrous behavior of the government, will once more lead to polemics which have not up to now acquired a greater degree of rationality only because of the obsession for secrecy by Itamarati and NUCLEBRAS. That is why there still remain questions for which up to now there have been no truly convincing answers:

Brazil has no uranium: It is said that the country simply would not have mineral in enough quantities to provide fuel for the reactors of its nuclear park and still pay for the cost of German technology with it. The government has already announced the discovery and measurement of deposits of 12,345 tons of uranium. It is reported that NUCLEBRAS has already measured deposits which are considerably larger but is keeping them a secret.

Germany does not have uranium enrichment technology: Since the uranium enrichment system by means of centrifugal jets (jet nozzle), a German patent, has not yet been tested industrially, Germany is being accused of selling an inexistent technology to Brazil. Actually, laboratory tests justify the expectation that the method will function, although in an industrial scale it will consume ridiculous amounts of electrical energy. Nevertheless, because it has a large amount of idle hydroelectric energy during some hours of the day, Brazil is one of the few countries able to use that system, consuming in it that hydroelectrical energy not used during early morning.

Brazil does not have the means to pay the cost of the agreement--This is one of the accusations which may be discussed without resorting to the information which NUCLEBRAS conceals. The Brazilian balance of payments reveals that the country in coming years will have very little money for the intensive expenditures the program requires.

The agreement would make a part of the capital goods industry of Brazil a state-owned agency--NUCLEP [NUCLEBRAS Heavy Equipment, INC], a NUCLEBRAS subsidiary responsible for manufacturing the heavy equipment for reactors, is, according to the government, a strategic industry which must be controlled by the state. According to some businessmen, that type of industry is only a large shed provided with good cranes linked to a good engineering office, since the manufacture of reactor parts is an almost handicraft operation. In such case, there is no reason for the state to run it.

NUCLEBRAS is a new PETROBRAS [Brazilian Petroleum Corporation]--For good or bad it is probable. It may differ from its cousin if it in fact finds uranium. In any event, it is similar to it because of its gigantic size, its liking for secrecy and its capacity for hiring passed-over military men and bureaucrats.

The Agreement is Within the Reach of Anyone

If NUCLEN headquarters were in Germany, any person would have access to the terms of the agreement among its stockholders at the Commercial Registry of the municipality, a department of the judiciary branch. In Cologne for example, it would be enough to go to the address at No 1 Reichespergerplatz or to write to "Amstgericht Kiln-Handelsregister," 5000 Köln, or even just call 7-71-11. There, an official of that department assured us last week that he was authorized to give information on the telephone or allow a direct visit, or even provide xeroxed copies of any agreement of the type that may be in his files. The Commercial Register charges one mark--nearly 16 cruzeiros--per sheet. Public access to such documents is guaranteed by the German commercial code.

There is no way, therefore, that a German newspaper can be seized or tried for revealing a stockholders agreement which is of public knowledge. "That would be inconceivable here, even if it were a matter of the disclosure of confidential agreements between companies, providing there were public interest in its publication," explains Erkia Martes of the respected weekly DIE ZEIT, member of the German Press Council, an independent body whose objective is to watch over freedom of the press in the country. In KWU, where it is not forgotten that the Brazil-German nuclear agreement was leaked prematurely in 1975 because of a German indiscretion, company spokesmen emphasize, not without a certain relief, that the episode of GAZETA MERCANTIL "is an internal affair of Brazil."

Vital Statistics of the Country's Nuclear Program

The essential questions and answers on the Brazilian nuclear program based on the 1975 agreement with Germany:

1. What is it? According to the agreement, Germany pledges to sell Brazil the complete technology of the so-called nuclear fuel cycle. That includes the extraction and concentration of uranium ore, the enrichment of the uranium that will serve as fuel for the reactors, the design, manufacture and operation of the reactors and the reprocessing of the fuel used in them. Brazil has already purchased two reactors and may buy six more of the German KWU brand.
2. What is it for? The reactors are destined exclusively for the generation of electrical energy. Uranium not used by the reactors will be exported. Reprocessing of fuel allows the obtaining of plutonium, which can also serve as fuel for future reactors of another line. Plutonium is also the raw material for the atomic bomb [as published].
3. How much is it going to cost? The total cost of the program is not known. Latest estimates speak of \$20 billion to be spent in the next 10 years. The more pessimistic speak of \$30 billion, which is the equivalent of more than half of Brazil's foreign debt.
4. Who is going to execute it? Except for the Angra I powerplant, which was built and delivered ready to operate by Westinghouse, responsibility for the program belongs to NUCLEBRAS and its subsidiaries (one for each phase of the fuel cycles) partnered with German companies.
5. What has been accomplished up to now? One reactor heavy equipment factory has been built in Itaguaí, Rio de Janeiro.
6. What remains to be done? Place the Angra I powerplant in operation; complete construction of Angra II, the first under the agreement with Germany; decide where Angra III will be built and begin work; begin the construction of uranium enrichment and reprocessing plants.

8908

CSO: 5100

BRAZIL

FIGUEIREDO TO HONOR NUCLEAR AGREEMENT WITH FRG

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 6 Sep 79 p 5

[Text] In a speech at Belo Horizonte yesterday during the commemorative ceremony of National Week, the president of the republic reiterated the decision of his government to fulfill the nuclear agreement signed with Germany: "We maintain, and we shall maintain, a sophisticated agreement with our German friends which will allow us to learn the technology of the atom, the passport to the peaceful energy of the 21st Century."

Previously he had already declared: "We advocate, as the people of Minas Gerais exemplify so well, conciliation; the extended hand; the miracle of a people for whom the day of glory is one of forgiveness and forgetting. And it is not a day of anger, a day of violence. It is a day of addition and not that of division. It is a day of arrival and not of departure, a day of finding and not of losing."

General Figueiredo emphasized: "Whoever cannot understand; whoever does not want to place himself in the perspective of a society in search of peace and harmony for constructing the future, whoever does not understand the voices of our most legitimate tradition, will have the rejection with which Brazilians bury those bent on turning back the pages of the history book."

The presence of Figueiredo in Belo Horizonte was marked with showers of torn paper, firecrackers, banners and much cheering, in the greatest reception of a president of the post 1964 period in Minas Gerais. From the time he handed at 0925 until the time of his return to Brasilia at 1645, Figueiredo was always surrounded by a crowd, sometimes forcing security personnel to clear the way by force.

Delay

The program prepared by the government of Minas Gerais suffered a delay of more than an hour because on the way from Pampulha--the Secretariat of Health--where the commemorative ceremony of National Week was held, the party stopped twice so that the president could greet people on the streets.

After leaving the military area of the airport, the president met with an old orderly, to whom he referred only as "Tiao," and from there the presidential security staff began to have great difficulty in containing the small crowd which even fought among themselves for an opportunity to be greeted by Figueiredo. At his side Governor Francelino Pereira waved at the people.

On the lawn at the entrance to the rector's office of the Minas Gerais Federal University [UFMG], nearly 500 taxis forced General Figueiredo to descend from his car to greet the drivers, who applauded him with hand claps and with their horns.

The shower of torn paper was thrown from the upper stories of the buildings of Afonso Pena Avenue in the center of the city, and because of a lack of containment ropes, the crowd surged into the street blocking the advance of the party. Figueiredo descended from his car at Praca Sete and had a cup of coffee at the Perola Cafe.

Broken Windows

In the struggle for the best vantage point from which to watch the president have his coffee, the crowd broke the windows of business establishments around the Perola Cafe and it was necessary to use sirens constantly and for security personnel and motorcycle escorts to push back the crowds so that the party could arrive at the Secretariat of Health.

The auditorium of the Secretariat was too small to hold the more than 1,500 guests selected by the state government. Many had to remain outside because security personnel prevented the entrance of more people.

The orchestra and choir of the Palace of Arts performed during the ceremony, and soprano Maria Lucia Godoy sang the "Bacchianas No 5" by Villa-Lobos. Afterwards there were speeches by the governor and by the president of the republic.

After the ceremony there was a gathering of students at Praca da Liberdade, and after the signing of agreements at Palacio da Liberdade, the party moved on to the SESC vacation resort in Venda Nova 20 kilometers from the Center.

5,000 at Lunch

The barbecue was preceded by a cocktail party and nearly 5,000 persons took part in the lunch, according to estimates of the company officials who prepared it. The tables were placed around the swimming pool, occupying the game courts and the entire area of the restaurant.

Despite efforts by security personnel, hundreds of politicians invaded the area reserved for the party and surrounded the president, who was unable to finish his lunch and distributed hundreds of autographs.

The party left the SESC vacation center at 1600, and shortly before leaving for Brasilia, General Figueiredo declared to a radio station that he had been "moved" by the reception given him in Belo Horizonte. Despite the intervention by Marco Antonio Kraemer, assistant press adviser of the Presidency of the Republic, the president did not agree to grant a collective interview.

In his 6-hour stay at the capital of Minas Gerais, the president of the republic received several requests from politicians and the people, one of them a complaint about the high cost of living in Belo Horizonte prepared by councilman Antonio Carlos Carone of the Brazilian Democratic Movement.

Former Brazilian soldier Firmino Florindo Cavalcanti gave security personnel a scare because he clearly demonstrated that he was armed. He gave his revolver to a Military Police colonel and then delivered a letter to the president.

The only unpleasantness took place in front of the prefecture on Afonso Pena Avenue, where the party did not even become aware of a demonstration favoring amnesty at Praca Afonso Arinos on the balcony of the Law School of the UFMG.

Agreements

The agreements, contracts and protocols signed yesterday in Belo Horizonte by the president of the republic assure the state allocations of 40.9 billion cruzeiros for the construction of 150,400 homes for the people, basic sanitary projects, construction of a new airport for the capital and for doubling the width of 85 kilometers of highway BR-40 between Belo Horizonte and Conselheiro Lafaiete.

The housing for the people will be allocated to 300 municipalities of Minas Gerais, 60,000 of them to be built in the metropolitan region of Belo Horizonte.

"Day of Glory and Forgiveness"

This is the complete text of the speech by President Figueiredo:

"People of Minas Gerais: I came to Minas to commemorate these days of National Week with you; Minas where everything began; Minas of the first martyrs; Minas where it is learned to love freedom, an eternal dream even today.

I have come here after passing through Sao Paulo where everything was consummated, where the vibrations of the Brazilian soul reached the heart of the young Portuguese prince.

From the place where for the first time there shone in the country "The sun of Freedom in brilliant rays," as we sing these days.

From Sao Paulo to Minas I meditated on the unforeseeable paths of the people. The young Pedro do Ipiranga was a grandson of the very same Maria who barely 30 years before had approved the sentences of Tiradentes and his comrades.

Such are the whims of history that a few years later the same prince would dream of once more reuniting his two countries into one. To Dom Pedro it seemed natural to join the title of King of Portugal to that of Emperor of Brazil.

Whims of history perhaps, or perhaps an indication of the character of the Brazilians assimilated by Pedro when young. We advocate, as the people of Minas Gerais exemplify so well, conciliation, the extended hand, the miracle of a people for whom the day of glory is one of forgiveness and forgetting. And it is not a day of anger, a day of violence. It is a day of addition and not of division. It is a day of arrival and not of departure, a day of finding and not of losing.

For us Brazilians hope resides in the idea of union, of cohesion. As the people of Minas Gerais know so well, because they always presented themselves united and cohesive at the great moments of our history. This should continue to be so today for the good of Minas and Brazil.

Whoever does not understand us to be that way; whoever does not want to place himself in the perspective of a society in search of peace and harmony for constructing the future, whoever does not understand the voices of our most legitimate tradition, will have the rejection with which Brazilians bury those bent on turning back the pages of the history book.

In the last century, in this part of the world, the independence of which Brazilians dreamed was practically limited to its political expression. Particularly in the southern part of the continent, the colonialists were satisfied with supplies of raw materials and native products in their natural state. They needed a cheap labor force and if the immigrants and exiles were not enough, there were always other races to enslave.

There were no industrial activities, not even basic ones. There were few schools, and fewer still were those in which there were taught the ideals of freedom, which were beginning to appear in other parts.

For that very reason, and with a few exceptions such as the Minas Gerais, accomplishments in iron and steel production at the beginning of the 19th Century, we arrived at this century lagging with respect to many of the techniques and sciences we had not learned or experienced.

Today we know that political independence will be meaningless if it does not include primarily the reaffirmation of the cultural individuality of peoples.

In a world which is becoming smaller, the maintenance of cultural characteristics is the reason for the survival of national identity. I maintain, therefore, that an equalizing and depersonalizing uniformity cannot be accepted at the inevitable result of progress, international coexistence and the desirable exchange of ideas.

Moreover, the concept of independence then affects the economy, the knowledge of technology and social development. The wealth of this world would be useless if it did not serve to improve the quality of life of the people. Spending on luxuries, waste in useless showy things are other insults to the dignity of the human being.

Therefore, I believe that the most legitimate expression of independence is the equality effective among nations for national sovereignty and non-intervention in the internal affairs of others. Equality among men requires respect for their status as the beneficiaries of all created things regardless of their place of birth, their beliefs or the color of their skin. That is why I maintain the indissoluble and indivisible link between the concept of independence of nations and the right of all peoples to a fairer and more equitable share of worldly goods. Otherwise we will be violating on earth the destiny humanity will enjoy in that other common homeland the Creator has reserved for us.

Naturally, equality is not based on indolence or on the passive contemplation of opportunities, fleeting and passing as they tend to be.

People should have to struggle for their own progress in a sincere attempt to correct the injustices that will always exist.

Looking to so many young people, as today I saw in Belo Horizonte, I can say that within the space of my generation it has been that way. And the generation of those young people will continue to act in that manner.

Within the spirit of the end of the century, we are acquiring knowledge and technology for today and for the future. And we shall continue along that road despite the passiveness of the incredulous and the defeatist attitude of those who condemn everything and aspire to nothing.

We are improving our products. We are creating new renewable sources of energy, also as insurance of our independence on a scale rarely seen.

We are not only building the greatest hydroelectric powerplant ever known in partnership with our Paraguayan neighbors, but we are building some of the largest powerplants in the world within our borders. We maintain, and we shall maintain, a sophisticated agreement with our German friends which will allow us to learn the technology of the atom, the passport to the peaceful energy of the 21st Century.

Although at times it may seem that we lack everything, we continue to be large food producers. For some heavily populated countries, Brazil continues to be a potential formidable supplier of food.

On the domestic plane, we are going to carry out projects of great significance. Within 4 years the Steel Railway [Ferrovia de Aço] and the Central Line [Linha do Centro] will form an integrated system capable of hauling 95 million tons of products annually from Minas Gerais to the rest of Brazil and the world.

Investments in Ferrovia de Aço should reach 50 billion cruzeiros. Orders to Brazilian industry cover all of the locomotives and cars required, in addition to large quantities of equipment, systems and services.

As I promised in this very hall a little more than a year ago, I have just authorized the beginning of the fourth phase of the national iron and steel program. The first hot strip rolling mill of that program will be installed by USIMINAS [Minas Gerais Iron and Steel Mills, Inc.] in the Ipatinga-Ouro Branco industrial zone. The investment for that purpose of 20 billion of today's cruzeiros will in large part come from resources of USIMINAS itself. It is worth noting that 85 percent of the equipment will be acquired from the national capital goods industry.

In addition to those, several plans such as the ones we are going to sign today for projects in this state will be put into effect. The government is not going to hold back within the realities of the budget, of that the Brazilians may be sure, confident and optimistic. We shall continue the consolidation of political independence on the economic plane.

However, it is in the social aspect, beyond all the expenditures made on man and for his welfare, that we shall indeed obtain national independence. Because that is what I believe, I wish to make it very clear that the thinking and the action of my administration is not only being carried out in constructions, projects and buildings, factories and machines, powerplants and generators. No matter how necessary material goods may be, we must not forget that everything exists for man. And if it does not contribute toward his happiness, it is of no use.

We Brazilians want progress but not a materialistic society.

I think, therefore, that our independence will only be complete when spending for the health of man, his education, his home, his welfare, and so forth can be expressed in the same large amounts as those which refer to visible and palpable progress.

Only thus shall we achieve the ideals of those for whom independence was the supreme good. Their aspiration echoed along the banks of the Ipiranga that afternoon of 7 September 1822 and it continues to reverberate today.

That inspiration fills our hearts with even greater dreams of independence; of a more and more active role by Brazil in the community of nations.

8908

CSO: 5100

ACCUSATIONS OF IRREGULARITIES IN NUCLEAR PROGRAM DENIED

Batista Grants Interview

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 7 Sep 79 p 6

[Report on interview with NUCLEBRAS President Paulo Nogueira Batista on 6 September at Planalto Palace]

[Text] The volume and frequency of accusations made against the Brazilian nuclear program, according to NUCLEBRAS [Brazilian Nuclear Corporations] president Paulo Nogueira Batista "make one suspect that there is a certain organization; they assume the nature of a campaign." He does not state, however, that such a campaign is being waged by the press. "It is possible," he said during an interview he granted newsmen yesterday afternoon at Planalto Palace, "that the press has not understood the real motives behind those reports constantly being published with respect to the nuclear program. The press has its own judgement values and I believe that the newspapers have the capacity for judging the truth, quality and criteria of the news that comes to their attention."

The interview, which was held in one of the rooms of the second floor of the palace so that the largest possible number of reporters could be accommodated, began a half hour late. Paulo Nogueira Batista was presented by Minister Said Farhat, who sat at his side accompanied by Col Rubem Ludwig, executive secretary of the National Security Council, and by another director of NUCLEBRAS. Only that director, however, remained seated until the end of the interview. On both sides of the table were 10 or so colored panels and graphs mounted on easels, but they were never used. Paulo Nogueira Batista restricted himself to quoting the Senate CPI [Congressional Investigating Committee] report and to saying that he was in full agreement with its terms, placing himself then at the disposal of the reporters.

Despite having mentioned an "organization, a campaign" during the course of the interview, the NUCLEBRAS president did not wish to say directly which country could have sponsored the disclosure of the agreement signed with the KWU. He added: "However, if we were to ask as they do in police stories, who would benefit from the crime, we would have a good clue." For him, those interested would be those countries who lost the opportunity to supply Brazil with nuclear equipment and now fear future competition from Brazil.

He confirmed that Minister Cesar Cals, "in a timely and justifiable" manner, opened an inquiry to establish the responsibility for the leaking of secret information to the press. The consequences will depend on what is uncovered; whether it is negligence or crime. If it is revealed that there is involvement by some other country, the affair will then come within the purview of Itamarati.

Paulo Nogueira Batista did not believe that the statements by Minister Cesar Cals and Saraiva Guerreiro on possible interest by other countries in Brazilian cooperation with respect to energy included the disclosure of items of the secret agreement. The mention of the possibility of cooperation does not mean, he said, "exhibition of the arrangements made between NUCLEBRAS AND KWU." However, he said that disclosure of those commitments "instead of helping us, could trap us." However, he did not want to specify what specific harm would result from such disclosure. "I believe that we should minimize the damage already caused; I do not intend to go beyond that which has already been disclosed," he said.

In reply to other questions, the president of NUCLEBRAS declared he has an interest in cooperating closely with the National Congress, even providing it with secret information although by law he is not obliged to do so. "That is what I call cooperation," he explained.

Continuing, Nogueira Batista expressed the certainty that the minimum share of nationally manufactured components of the eighth reactor, foreseen as being 70 percent, shall be exceeded, just as the foreseen minimum for the second unit, has already been exceeded. "It is not, however, necessary to be in a condition to produce 100 percent of the components in order to export some," he observed. "The agreement signed with KWU foresees that it will provide the components which Brazil does not produce."

The estimated area for joint action is Latin America, however, according to the president of NUCLEBRAS, nothing prevents business from being done with countries of other continents also.

Paulo Nogueira Batista denied the possibility of "a game with marked cards" in the accomplishment of future bids for the construction of the last four powerplants of the nuclear program. He declared that after the first four powerplants, "We shall have assumed complete responsibility for the management of NUCLEN [NUCLEBRAS Engineering, Inc.]," and the review of bids shall be done by Brazilian technicians. Therefore, KWU would not have any advantage.

Closing the interview, the president of NUCLEBRAS did not accept the story given by a reporter on recent statements by former minister Ueki according to which he was not aware at that time of the details of the agreement signed with KWU. He recalled that Ueki a few days ago had even come out in defense of the agreement, negotiations for which he had followed and completely approved. Without ministerial approval, Nogueira stated, it could not have been carried out.

Nogueira Batista Refutes Accusation

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 7 Sep 79 p 6

[Text] "The accusation with respect to an effective control of NUCLEN by the foreign minority partner is so unfounded and irresponsible that it can only be explained as a preconceived attitude of interests possibly affected negatively by the Brazilian nuclear program or by the agreement between Brazil and the FRG; or at the minimum, a hasty judgement resulting from the maliciously selective reading of the text with emphasis on clauses or parts of clauses." The statement is contained in the text read by the president of NUCLEBRAS, Paulo Nogueira Batista, at a secret session of the nuclear Congressional Investigating Committee and released in part by Planalto Palace.

In another part of the document, he announced that "the size of the eight powerplants is justified not only in energy terms but particularly in industrial and technological terms, because in addition to having given us bargaining power for obtaining access to technologies not accessible in isolated purchases of the Angra I type, it allows the planning and execution of subprograms of the transfer of technology and industrial training." Paulo Nogueira Batista also said that "after one, two or three or even more powerplants are built without the proper sequence and rhythm, it becomes impossible to reach the objectives of assimilating and establishing technology in terms of technical personnel permanently devoted to the successive activities involved in the construction of a nuclear powerplant."

The president of NUCLEBRAS insisted on his theory that there is a campaign directed against the nuclear agreement, although at no time did he reveal directly that the Brazilian government has knowledge that the North Americans would be maneuvering against the nuclear agreement signed with Germany. Meanwhile, the insinuations by the president of NUCLEBRAS were clear enough throughout his interview in which the affair was investigated by the press. According to legislators who witnessed the deposition before the nuclear CPI, there were direct criticisms made against the North Americans with respect to the subject.

The president of NUCLEBRAS, in his deposition, argues that the stockholders agreements essentially address domestic economic affairs of a company. In his opinion "they regulate the relationships between partners, and in companies of closed capital they can be classified as being of restricted circulation, providing they contain material of commercial interest to the stockholders whose disclosure could mean harm to their legitimate commercial interests." The law, according to the president of NUCLEBRAS, does not require the disclosures of that type of document and the jurisprudence of the courts, and as far as he is concerned, recognizes the rights of the stockholders to maintain their secrecy.

According to Paulo Nogueira Batista, the companies of mixed economy organized pursuant to the commercial legislation of the country are not, therefore, obliged to publish the stockholders agreements.

And he added: "They would not be obliged to heed requests for providing documents on their internal economy to CPI's either, since the laws which regulate the creation of them only give them the right to request documents which have to do with bodies of centralized public administration and with autonomous bodies." Compliance with the CPI request, unless otherwise determined, is therefore, "a voluntary act for those companies created by commercial laws."

The president of NUCLEBRAS also believes that in the case of the NUCLEN stockholders agreement, because it is a matter of a document of implementation of an international agreement, and because it contains clauses regulating the activities of NUCLEN abroad, "an affair with consequences for the foreign policy of the country," the document comes under the regulation of other legislation "which has to do with safeguarding secret documents of national interest." For Paulo Nogueira Batista, the NUCLEN stockholders agreement contains "clauses which in the understanding of NUCLEBRAS, as far as its commercial interests are concerned, and in the understanding of the government, as far as its political-diplomatic interests are concerned, fully justify the secrecy adopted." According to him, it is a matter of those clauses which refer to mutual consultations between NUCLEBRAS and KWU with respect to the Latin American market for nuclear powerplants. He adds: "A joint action is foreseen which could assume different forms. In that joint action the rendering of engineering services and equipment for nuclear powerplants in Latin America, is assured for NUCLEN and Brazilian industry, it falling upon the KWU to provide our neighbors with those items which cannot be produced in Brazil."

Technology

The objectives of the transfer of technology, according to the released portion of the deposition, in addition to those of the promotion of national private enterprise, which "with the generation of electricity are the mainstays of the German-Brazilian nuclear program," can only be reached in a process of progressive national qualification in the areas of engineering and manufacturing of components. Such qualification, at high quality levels in the understanding of the government, is necessary, not only for taking care of the domestic market, but also for the conquest of a growing share of the international market for services and products in the nuclear field.

According to Paulo Nogueira Batista, that transfer, particularly in the nuclear area, has to be accomplished "under conditions of total safety," since in the case of NUCLEN "what we wanted and achieved was a constant pattern of stockholders agreement which matches the maximum intensity in the rate of the transfer of technology with the maximum of safety

required in the construction of nuclear electrical powerplants, whether it be because of the size of the investment--nearly \$2 billion per powerplant--or because of the high standards of quality which must be met."

Further on, the president of NUCLEBRAS declares that control of NUCLEN "is firmly in the hands of NUCLEBRAS, which is its majority stockholder," this being expressed "not only in the statutes, but also in the stockholders agreement itself, this being reflected in the day-to-day administration of NUCLEN." In his opinion "the rights recognized for KWU in matters having to do with the appointment of the technical director, for example, or the existence of a technical committee, do not affect the command that NUCLEBRAS actually wields. They are in a strict correlation with the obligations assumed by KWU with respect to the transfer of technology and with respect to its direct technical responsibility to the customers of NUCLEN for the quality of the work it performs."

He also justifies the partnership when he says that since Brazil does not have its own knowhow at this time for the planning of nuclear-electric powerplants, the system agreed upon in NUCLEN is without the shadow of a doubt that which best responds to national interests. The alternative would be to import the basic project in the form of a black box "as happened with Angra I purchased from Westinghouse," or to obtain another license abroad, "which would not be very easy," in an attempt to prepare the plans in Brazil on its own responsibility, "a hypothesis under which we would have to resort necessarily to foreign consultants, who in that status would not, however, assume any responsibility for the results."

The structure of NUCLEN, according to Paulo Nogueira Batista, throughout the years has undergone constant adjustments to reflect the increase in Brazilian qualification, "something which is already under way." Whenever NUCLEBRAS believes that NUCLEN is in a position to "assume full and exclusive technical responsibility toward its customers with respect to the new powerplants, all NUCLEBRAS has to do is notify KWU of that fact." At that time, he added, "A substantial reorganization of NUCLEN will be undertaken so as to restrict the activity of the German technical director and the scope of the technical committee to the respective conclusion of only those projects already begun with the coresponsibility of KWU."

Also, according to the president of NUCLEBRAS, it was foreseen "that such declaration could take place at the beginning of construction of the fourth powerplant of the program of eight powerplants of 1,200 MW each, it being very unlikely, however, that such a decision will be made before the complete construction of two powerplants." In any event, for him "the assumption of full responsibility by NUCLEN with respect to our projects will take place automatically and mandatorily at the end of the commissioning of the fourth powerplant."

According to the partially revealed document, NUCLEBRAS "may fully exercise the decisive power of NUCLEN at any time against the technical opinion of the foreign partner." And it adds: "We do not do so as long as it does not affect the national interest because of the simple fact that we do not yet have the necessary technological capability to face the onus of such a decision whether it be with respect to the customer-concessionaires for electric service or with respect to the safety of the population."

According to Paulo Nogueira Batista, "pursuant to the strategy to be employed as much as possible, that of providing us with technology, it seemed to the government that it was favorable to the national interests to have the KWU as a partner of NUCLEBRAS in the NUCLEN, sharing with us the management of the company during the period of the transfer of technology, which incidentally, was denied to us by other countries which are still trying to prevent it." He also revealed that "it is worth remembering that pressurized light water reactor technology, the most modern to use in the world now, should still be used for some decades, coexisting at the end of this century with fast breeder reactors, which depend on the present reactors to produce the plutonium needed for their initial operation."

U.S. Pressures Criticized

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 7 Sep 79 p 6

[Text] The director of the Energy and Nuclear Research Institute [IPEN] Roberto Yoshiyuti Hukai, said yesterday before the Senate nuclear CPI that U.S. pressure against the Brazil-Germany agreement originated more from the Carter administration than from the technicians of the sector. "A sort of 'nuclear McCarthyism' was established in the United States in which some political scientists went so far as to suggest to the nuclear professionals of the industry and American academies how to design reactors to make them proliferation proof," he observed.

According to Hukai, that policy of the Carter administration aroused "a great rejection" in technical circles. "From all this uproar there emerged one positive effect: the awakening to the problem of nuclear proliferation, of interest to all humanity, and to Brazil in particular, as has been incessantly declared by the government," he said. "On the other hand, it serves us as a warning that we must constantly preserve the right to fully develop our nuclear energy potential for peaceful means without interference, which under the guise of preventing proliferation could hinder such potential."

The IPEN director also suggested the transfer of the National Nuclear Energy Commission [CNEN] from the Ministry of Mines and Energy to the Secretariat of Planning of the Presidency of the Republic. In his opinion, this transfer would be aimed at providing the CNEN with the prerogatives

of planning the Brazilian nuclear program and the creation of a high degree of independence with respect to electrical industry and companies in the aspects of regulation and licensing of nuclear installations of the country. Moreover, he added, such separation would give CNEN a greater flexibility in its interaction with other government agencies of technological creation, agencies which train human resources and those which set industrial standards and regulations.

On the other hand, Hukai emphasized that substantial changes could be made in the way the Brazil-German nuclear agreement is being implemented. He noted that there is great dissatisfaction in sectors of the basic industry, engineering, civil construction and industry in general in the country. He also pointed out the dissatisfaction in the scientific sector where there is a "lack of a spirit of agreement and participation."

He also suggested that the schedule of the agreement be readjusted to 10 years. "This readjustment is based on the reality of events. The first nuclear powerplant of the agreement will go into operation with a 5-year delay by comparison with the original schedule. A readjustment from 1990 to 2000 as the year for the conclusion of the agreement would have very beneficial results for the country such as the growth of the national capacity for assimilation of technology, which would reduce the amount of Brazil's foreign debt."

Finally, he explained that the adoption of the enrichment process by the nozzle process was adopted by the government despite the risks, "based not on its economy but on the availability of technology."

8908

CSO: 5100

CONGRESS INVESTIGATING NUCLEAR AGREEMENT WITH FRG

Newspaper Favors Public Discussion

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 2 Sep 79 p 3

[Editorial: "The Nuclear Agreement No One Knows"]

[Text] The chairman of the nuclear Congressional Investigating Committee [CPI], Senator Itamar Franco, confirmed that most of the documents having to do with the agreement signed between Brazil and the FRG were not brought to the attention of the Congress when the international treaty between the two countries was approved. More than that: Itamarati itself acknowledges that there are contracts similar to the one revealed yesterday by ESTADO, signed between the ministers of mines and energy of Brazil and the minister of technology of Germany. The Ministry of Foreign Affairs answers only for the agreement signed by its minister, at that time Azeredo da Silveira, and the German minister of foreign affairs. It is a paradoxical situation.

Actually, it seems that no one is responsible for anything and all concluded by approving an agreement which was secretly completed by NUCLEBRAS or some other agency of the federal administration, without the slightest inspection by anyone or even a broader knowledge by circles of the federal government itself. Definitely, it is a somewhat peculiar situation which allows us to ask: who is, finally, responsible for the execution of the nuclear agreement and for the serious errors which are being confirmed, making some of those signed contracts harmful to national interests? Is it the federal government? But who is the federal government if a ministry says that it is not responsible for what another one does and NUCLEBRAS [Brazilian Nuclear Corporations Inc.] adopts a position which is directly opposite to that of the National Nuclear Energy Commission, leaving FURNAS [Powerplants] in charge of building the powerplants in the middle without knowing to whom to turn? Who is responsible, and finally, why and what is this nuclear agreement no one knows?

This is the reason why we decidedly support--and no concerned Brazilian can do otherwise--the intention of the Congress to restudy the affair, making it open to public debate. No more of secret sessions on a subject which in other countries like the United States, and even in the FRG itself, is even the object of popular plebescites.

After all, Brazilian public opinion has the right to know what is happening. The impression existing with the disclosure of the document now published by ESTADO, is that, encouraged by the spirit of the treaty, many agreements are being signed at the same time in its name. As Professor Afonso Arinos pointed out, they are not international agreements but contracts signed between two countries which do not have the force of a document approved by Congress. Thus, Congress must publicly take up the debate again, something which has been difficult simply because the president of a state company, NUCLEBRAS, took the right unto himself to declare the documents secret, documents which have nothing secret about them nor do they jeopardize national security, and he refuses to turn them over to Congress. It was necessary--and this exemplary action is praiseworthy--for the vice president of the republic, Aureliano Chaves, to decide that all the documents requested be delivered to the Congress, which will then be able to discuss them broadly.

We only hope that his order will be obeyed by NUCLEBRAS, a state company like any other, without special powers which make it more powerful and superior to ELETROBRAS [Brazilian Power Companies, Inc.], FURNAS or CVRD [Rio Doce Valley Company], for example, and that the next session of the CPI where the agreement by the stockholders of NUCLEN [NUCLEBRAS Engineering, Inc.] will be discussed, will be truly public. Only thus can the suspicion which surrounds all the treaty today be dispelled because the NUCLEN stockholders agreement can very well serve as an example of what could be happening in NUCLEI [NUCLEBRAS Isotope Enrichment, Inc.], NUCLEP [NUCLEBRAS Heavy Equipment, Inc.] and in all the other subsidiary companies of NUCLEBRAS.

Let there be no secrets, particularly when they are used to cover commitments which harm the national interests and are assumed in the name of Brazil.

Commission Asks For Documents

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 7 Sep 79 p 6

[Text] Senator Paulo Brossard revealed yesterday that NUCLEBRAS should provide the CPI with secret documents Congress has not yet seen. The meeting of the commission with NUCLEBRAS president Paulo Nogueira Batista began the day before yesterday and ended yesterday after 1600 of depositions by several aids of the NUCLEBRAS president, who alternated in making explanations requested by the legislators.

The session was interrupted at 0400 yesterday and reinitiated at 0900. From 1100 to 1200, the CPI met for deliberations after the deposition by Nogueira Batista, and it distributed a note to the press signed by the vice chairman of the commission, Passos Porto (National Renewal Alliance, Sergipe) but not endorsed by the chairman, Itamar Franco (Brazilian Democratic Movement, Minas Gerais).

According to the note, "the CPI concluded that during the discussions information was provided, although not in all respects which justified the secret nature of the overall session. The majority and minority believe that the questions of the interests of the country go beyond party differences."

In his statements to the CPI, as well as in the interview he granted to the press in Planalto Palace in the afternoon, the president of NUCLEBRAS insisted that there exists a campaign aimed against the nuclear agreement, although he refused to state clearly whether it is a matter of U.S. pressures. He only declared that criticism "makes one suspect there is a certain organization."

Law Professor Makes Statement

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 6 Sep 79 p 5

[Text] Professor Celso Albuquerque Melo, professor in Public International Law of the PUC-Rio [Pontifical Catholic University of Rio], declared yesterday in Rio de Janeiro that the fact that the documents of "the protocol of Brasilia" and the "protocol of Bonn," were not submitted to the National Congress will in the future "make it easier for a unilateral denunciation" of the Brazil-German nuclear agreement.

According to Albuquerque Melo, the documents should have been submitted to the National Congress before approval of the nuclear agreement with Germany because the "protocol of Brasilia" signed in October 1974, "as the government has already stated, contains the guidelines for industrial cooperation between the two countries and served as the basis for the negotiations which followed, giving origins to the agreement itself."

He pointed out that the contracts signed outside the nuclear agreement are "as important or more so than the treaty itself because they are the ones which stipulate the entire procedure to be adopted."

The agreements between ministries, as far as Professor Albuquerque Melo is concerned, "are extremely common. However, these treaties should be coordinated by Itamarati, the entity responsible for the formulation of Brazilian international policy." According to the professor, however, there is still time for Congress to analyze the documents "pursuant to the Constitution itself, which establishes inspection by the Chamber and by the Senate of the actions by the Executive Branch, including those of indirect administration."

For Albuquerque Melo the bypassing of the Congress is not justified because "even being documents on guidelines for the accomplishment of cooperation, they actually trace the basic lines of the implementation of the agreement."

The professor also recalled that the "white book" on the nuclear agreement, disseminated with the intention of enlightening public opinion, "does not mention the 'protocol of Brasília' once, protocol seen by the public this week."

The greatest problem in the opinion of the professor, however, is the National Congress itself "which is not trained to discuss international affairs, not only because of the almost total lack of experience in international policy and law, but also because it has not become aware of the relevance of the affair for the life of the country. The speeches made in Congress, particularly those on foreign policy, are very naive, even speaking of a cold war and that communism is the greatest threat in the world, and some even boastful in the style of the beginning of the century."

As far as the secrecy maintained by the government and NUCLEBRAS on the documents is concerned, Albuquerque Melo argued that NUCLEBRAS, "because it is a state company, deals with public interests and not only with mere commercial contracts. Secrecy, therefore, is not a mandatory aspect established in clauses, however, the government could have asked for some reserve on the subject."

Physicist Luis Pinguelli Rosa believes that secrecy on the nuclear agreement "must be explained with clarity, explaining whether it is because of national interest or a simple protection of commercial interests." For him "it is already time that the government faced reality and proposed a change in NUCLEBRAS, primarily in that which refers to the creation of NUCLEN."

Other technicians, dissidents of NUCLEBRAS, aver that the conditions of the creation of NUCLEN--company responsible for the enrichment of uranium--are "much worse, because we even bought a technology which does not yet exist."

MDB Expresses Dissatisfaction

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 7 Sep 79 p 6

[Text] While ARENA legislators showed themselves to be satisfied with the deposition by Paulo Nogueira Batista, president of NUCLEBRAS, before the Senate CPI, those of the MDB said that in almost 14 hours of secret session the subject was not exhausted and that there was no reason for the holding of a secret session. "What is happening in this country is that there is an addiction by Itamarati and the military for maintaining secrecy on certain things," commented Roberto Saturnino (MDB-Rio de Janeiro).

"The statement and explanations by Ambassador Paulo Nogueira Batista did not deal with the controversy, because several doubts were left without a reply, for example, whether the energy demands of Brazil are going to require eight atomic powerplants by 1990," said the Rio de Janeiro opposition member. Another MDB representative declared that the president of NUCLEBRAS did not make any reference on the solution to the piling of Angra II, something which should be urgent, as well as on the problem of participation by national businessmen in the major supplying of equipment with fewer restrictions by existing German specifications. Because of this, Senator Paulo Brossard recalled that "other documents will be provided and we will be able to see the possibility of calling upon Paulo Nogueira Batista again."

ARENA Senator Passos Porto (Sergipe) has already become convinced that all doubts were cleared away. According to him, "There are details in the agreement which it is not advisable to bring to the people, primarily with respect to the commercial factor. Some Latin American countries like Argentina and Venezuela, and the United States, are not with us in this action." Commenting then that other countries "have their eye on Brazil," he emphasized that "We have to learn to have restricted documents because after the publication of the stockholders agreement by the Brazilian press, several Latin American newspapers published it." He recalled that "The protocol is a gentlemen's agreement, therefore, it does not have any legal value."

Suspects

Ministry of Mines and Energy sources revealed yesterday that the investigation opened by Minister Cesar Cals to establish the responsibility of officials of the agency in providing copies of the stockholder's agreement between NUCLEN and KWU to the press should not be concluded by any type of guilt established with respect to any of the suspected employees. The process should be sent to Itamarati, since although the affair may be treated carefully by the persons who are being entrusted with its conclusion, the government supposes that the leaking of this information originated abroad.

According to the same sources, Brazil would be trying to diminish the importance of the affair in order to avoid possible diplomatic problems, but it will not hesitate, whenever it considers it opportune, to publicly denounce foreign persons who may be involved. Meanwhile, newsmen accredited to that ministry would already be free of suspicion.

Broadening of Discussions Requested

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 12 Sep p 5

[Text] The chairman of the nuclear CPI, Senator Itamar Franco (MDB-Minas Gerais), once more requested in Belo Horizonte that the government broaden discussions on the Brazil-Germany nuclear agreement, saying that other documents such as the Brasilia agreement and the NUCLEI stockholders agreement, "more important than those already disclosed, remain inexplicably unknown by the CPI and the Congress." From the speaker's platform in the Chamber in Brasilia, Rio Grande do Sul Deputy Eloy Lenzi of the MDB asked President Figueiredo to reevaluate the "negative dimension, contrary to national interests of the multimillion nuclear agreement."

Itamar Franco charged that despite the insistence of the CPI in obtaining information on the NUCLEI stockholders agreement, "A very important document because it deals with uranium enrichment," the government continues to maintain secrecy on the subject.

The CPI chairman announced that by the end of this month or the beginning of October, the unit for isotope separation to be installed in the center for the development of NUCLEBRAS nuclear technology, will arrive in Belo Horizonte. The unit should be shipped in coming days at the port of Hamburg and, according to the senator, it is an "important part," of the nuclear agreement. Minister of Mines and Energy Cesar Cals and the members of the Congressional Mines and Energy Commission will be in Belo Horizonte on 21 September to visit the site of the installation.

The isotope unit, which will occupy an area of 220 square meters, is going to allow the training of Brazilian technicians and produce small quantities of enriched uranium which will serve as samples. Its installation in Belo Horizonte, according to Itamar Franco, "poses no risk to the city because it is neither a powerplant nor a reactor," even so he insisted in calling attention to the need for discussion of the agreement in Minas Gerais.

After reporting that the nuclear CPI is going to hear the German scientist who invented the process of uranium enrichment to be used in Brazil on 21 September, a process which "up to now has only been tested at the laboratory level," Itamar Franco criticized the secret nature of the meeting with NUCLEBRAS president Paulo Nogueira Batista and said that "95 percent of what was presented did not need to be concealed." As far as he is concerned, the day on which the Brazilian government decides to expand the discussions "many people may even change their opinion on the nuclear agreement."

For Rio Grande do Sul Deputy Eloy Lenzi, however, the agreement "benefits only the powerful industries which operate in the field of nuclear energy, it representing an enormous economic sacrifice for the country and a source of unease for the Brazilian people."

As far as Lenzi is concerned, the nuclear agreement "will contribute very little to the technological improvement of our industry because development of the sector cannot be imported but must emerge only from the work of Brazilian researchers. Moreover, unless other productive sectors demand a like degree of technological development, there will not be enough incentive for the sector."

The Rio Grande do Sul deputy was not interrupted by any member of ARENA during his statements but he was interrupted by Deputies Waldir Walter (MDB Rio Grande do Sul) for whom "the men in power who signed the agreement were much more interested in making the atomic bomb than in producing electric power," and Helio Duque (MDB-Para), who accused the president of NUCLEBRAS, Paulo Nogueira Batista, of "not being a serious man."

CPI Demands Classified Documents

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 14 Sep 79 p 6

[Text] Senator Itamar Franco (MDB-MG), chairman of the Nuclear CPI, announced yesterday that he will suspend the work of the commission for an indefinite period in case NUCLEBRAS president Paulo Nogueira Batista does not deliver to Congress, as he has been promising to do since last March, documents considered secret in order that once they are in possession of them, they can hear other witnesses, including Gen Dirceu Coutinho, former director of NUCLEI. Previously called to testify, he refused to make any explanations on his departure from the company, saying that he would only speak "if confronted, with specific facts."

MDB leader Senator Paulo Brossard promised Senator Itamar Franco that he will "vigorously" complain to the leader of the majority, Senator Jarbas Passarinho, on the new attempts by NUCLEBRAS, "and indirectly by Minister of Mines and Energy Cesar Cals," to hide new information on the Brazilian nuclear program." Next week, on 18 September, the president of ABDIB [Brazilian Association for Basic Industry Development], Valdir Gianetti, will be making explanations to the CPI on the participation of the industry in the nuclear sector, while on 20 September it will be the turn of physicist Oscar Sala of the National Research Council.

Note

According to Senator Itamar Franco, "There is nothing against Ambassador Paulo Nogueira Batista," by any of the members of the CPI. However, it seems strange that Minister of Mines and Energy Cesar Cals has not hurried the delivery of the documents requested. Yesterday the secretary's office of the CPI sent NUCLEBRAS an official letter requesting the following documents "with all possible urgency":

1. Protocol of guarantee of markets for mechanical components for nuclear powerplants signed with the Sao Paulo company in that field.
2. Correspondence exchanged between NUCLEBRAS and heavy machinery companies with respect to their participation in the nuclear program.
3. Lists of proposed prices by the heavy machinery industry within the framework of the protocols guaranteeing markets.

Previously, beginning last March, the CPI requested that NUCLEBRAS provide the following:

1. Copy of correspondence from American authorities having to do with negotiations between Brazil and the United States with respect to the purchase of reactors and the transfer of technology prior to the signing of the Brazil-Germany agreement.
2. Copy of the agreement signed between KWU and NUCLEBRAS.
3. Copy of the protocol of industrial cooperation signed 27 June 1975 between Brazil and Germany.
4. Copies of the Brazilian agreement, NUCLEI stockholders agreement, added parts to the stockholders agreement, in addition to the specific guidelines for the accomplishment of the nuclear agreement.

Silveira

Senator Itamar Franco also said that the CPI should shortly call on former Minister of Foreign Affairs and Ambassador to the United States, Azeredo da Silveira; Joaquim de Carvalho, former NUCLEN director (who allegedly left the company fed up with Paulo Nogueira Batista) and the chief engineer of FURNAS [Powerplants], Sergio Mota, to make their depositions. The legislator also expressed surprise that one of the advisers of Paulo Nogueira Batista in the secret meeting last week, passed the ambassador the following note: "Paulo it appears to me that the emphasis on secrecy and so forth is based on the reservation of the Latin American market, the loss of markets by the Americans and the impropriety of revealing commercial information. This leads to the secrecy of our point of view; as far as the senators are concerned the rest is a mere detail; remind them of NUCLEI, URENCO and so forth. If there is agreement on secrecy, the discussion will be more tranquil and we can say that something will be disclosed. It would be well to emphasize the energy market. I remind you also that providing the indicated annexes will make them less liable to criticism."

Silence

None of the legislator members present at the secret session wished to make a statement yesterday on the stories about the meeting being published by the press. However, a Planalto Palace source assured us that "that was

already expected," since after the disclosure of some documents (by ESTADO, GAZETA MERCANTIL and JORNAL DO BRASIL), a government sectors, although minority members, suggested that the meeting be attended by newsmen. There was fear, however, that the action would displease the German embassy and the Itamarati suggestion that secrecy be maintained was followed.

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In spite of this, however, it has been impossible, due to the lack of foreign exchange, to carry out crude oil imports from Libya during the past 20 days. That nation, in accordance with the most recent decision made at the OPEC conference, reduced the 90-day time period on credit sales to 30 days in the case of Turkey. This situation has caused delays in petroleum imports from Libya. Deniz Baykal, Minister of Energy and Natural Resources, is currently working in Libya toward raising the term for credit sales to 90 days again.

Turkey obtained a significant portion of its petroleum needs during the summer months by means of a 30-million-dollar credit provided by the Islamic Development Bank; this credit has been completely used up, however. In addition, a substantial portion of the 630 million dollars in foreign exchange sent by Turkish workers employed abroad during the month of May was set aside for expenditure on petroleum, and thus Turkey did not experience a serious petroleum shortage during the summer months. With the gradual decline in workers' remittances following this boom, and the seasonal decline in export earnings, however, it has once again become difficult to find foreign exchange for petroleum.

Central Bank's Foreign Exchange Insufficient

Turkey has until now been unable to pay its creditors for some of the petroleum products imported in recent months. As the money for these purchases, made on credit, is not paid, despite the term for payment having expired, debts have again increased substantially, and the likelihood of obtaining further purchases from these sources has begun to decline.

It has been announced that the foreign exchange position of the Central Bank, despite both the foreign assistance obtained and other foreign resources, is insufficient to match the expenditures, and that it needs at least 200 million dollars in foreign exchange for the petroleum imports of September alone. However, in a report written by the TPAO General Directorate for the Central Bank and the Ministry of Finance, it is reported that, if the necessary foreign exchange is not obtained within the shortest time possible, commitments for certain products will be compulsorily cancelled; it was requested that a definite plan for payment be made and that this be sent to the TPAO and the Petroleum Office.

No Motor Oil or Fuel Oil

Due to insufficient foreign exchange reserves, Turkey has for some time been unable to import motor oil and fuel oil. As a result of this situation, it is currently suspected that motor oil and fuel oil will, in the near future, begin once again to be unavailable on the market.

Turkey has for some time been carrying out all its imports of crude oil and petroleum products by paying in advance, while the time periods of credit sales are so short as to be measured in terms of days. In this situation, after any purchase on credit, a failure to transfer foreign exchange on time creates

serious consequences. Moreover, certain "friendly and fraternal nations" are applying the most stringent of restrictions in sales to our nation.

As long as serious and effective conservation measures to cut down on domestic consumption are not taken, a solution to Turkey's petroleum problem is not to be expected in the near future.

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LIBYA REPORTEDLY REJECTS REQUEST FOR MORE PETROLEUM

Istanbul TERCUMAN in Turkish 4 Sep 79 pp 1,12

[Article by Kenan Akin]

[Text] Tripoli: Deniz Baykal, Minister of Energy and Natural Resources, in Tripoli to attend the 10th anniversary of the Libyan Revolution, held a long discussion the day before yesterday with Petroleum Secretary (Minister) 'Izz-al-Din al-Mabruk.

Following the conversation between the two ministers, it was learned that Libya will not grant Turkey an increased quota of petroleum.

In the meeting, also attended by Turkish Ambassador Mustafa Asula, the view prevailed that Libya, about to decrease its production, could not set aside a new quota of petroleum for Turkey. As is known, Libya had previously undertaken to supply Turkey with 3 million tons of petroleum per year below the posted price, and on three months' credit.

Although an agreement on principle had been reached for this quota to be 4 million tons during Prime Minister Ecevit's official visit to Libya, it has been learned following the most recent talks that one million tons of this will not be able to be provided.

It has been learned that the Libyan Petroleum Secretary (Minister) told Baykal that Libya could not promise to sell more petroleum than it produces and in fact is about to cut back on production. However, an agreement on principle was reached for the elimination of certain obstacles that have arisen in the implementation of the quota assigned to Turkey. A meeting at the technical level on this topic was held yesterday as well.

Deniz Baykal, who is expected to meet with 'Abd-al-Salam Jallud, will return to Turkey today.

COSTS, COMPETITION DAMPEN PROSPECTS OF WATER EXPORTS

Istanbul TERCUMAN in Turkish 2 Sep 79 p 4

[Text] It has been learned that, under today's conditions, it is not possible for Turkey to sell water to Kuwait, which imports its drinking water from abroad.

For some time, activities carried out in order to export drinking water to the Arab nations, especially Kuwait and Saudi Arabia, had been intensified upon a private sector enterprise's beginning production of plastic water bottles. In a period during which efforts were being made to develop trade relations with the Arab nations, the foreign exchange to be earned by exporting the various natural waters, which Turkey possesses in great quantities, had increased the interest even more.

However, the most recent report sent from our Kuwait Embassy addressed to officials of the Adana Chamber of Commerce has revealed that, under current conditions, it is not possible to provide the water in accordance with the qualities, packaging, service, and price specified by Kuwait.

The embassy report sets forth the minimum conditions necessary for the water to be able to be exported and notes the following specifications:

- * The drinking water is to be bottled in 1.5 liter plastic bottles and contained in 12-bottle cardboard boxes.
- * The sale includes delivery in Kuwait.
- * The packages will be labeled in Arabic; an analysis and date of use for the water will be included; and a health permit will be obtained from the local administration.
- * The price of a carton of water is not to exceed \$2.90 or \$3.60.

Officials state that, even if the technical specifications and packaging requirements were adhered to, it would not be easy to establish the water on

the Kuwait market in the face of low-priced competition from established concerns from France, Italy, Yugoslavia, Spain, Bulgaria, and Lebanon.

According to the competitors' prices obtained, approximately 15 TL is paid per kilogram of water in Kuwait, while the cost of overland transportation from Turkey to Kuwait is 10-12 TL per kilogram. As for transport by sea, this is not suitable as no regular service exists. The costs of plastic bottles, cardboard boxes, packaging, collecting the water from springs, transport, and general overhead thus leave no chance to the Turkish entrepreneur faced with competitors utilizing modern production facilities and transport by sea.

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